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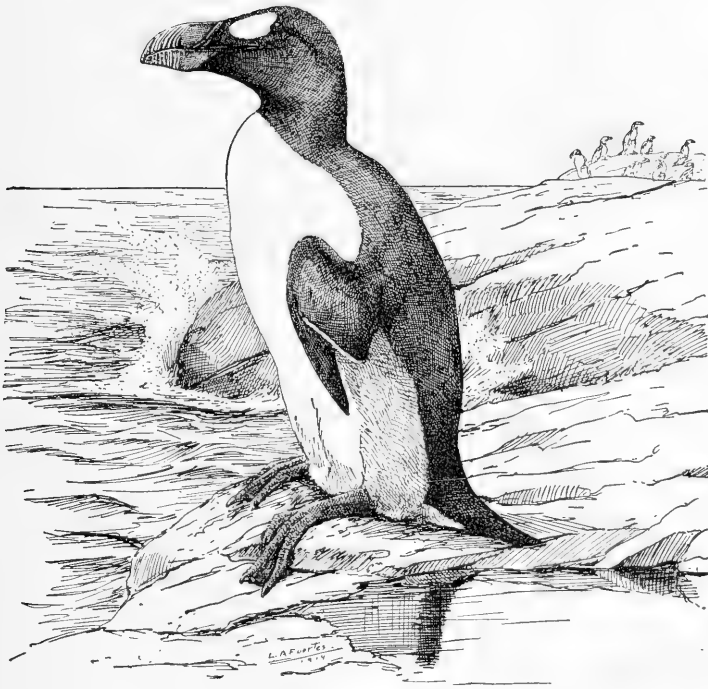
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APRIL, 1920.¹

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ANTHONY, A. W., Ironside, Ore.....	(1885)1895 ²
BANGS, OUTRAM, Museum Comp. Zoology, Cambridge, Mass..	(1884)1901
BARROWS, Prof. W. B., Box 1047, East Lansing, Mich.....	1883
BATCHELDER, CHARLES F., 7 Kirkland St., Cambridge, Mass....	Founder
BEBBE, C. WILLIAM, New York Zool. Park, New York, N. Y..	(1897)1912
BENT, ARTHUR CLEVELAND, Taunton, Mass.....	(1889)1909
*BICKNELL, EUGENE P., 30 Pine St., New York, N. Y.....	Founder
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CHAPMAN, DR. FRANK M., Amer Mus. Nat. Hist., New York, N. Y.	(1885)1888
*CORY, CHARLES B., Field Museum Nat. Hist., Chicago, Ill.....	Founder
DEANE, RUTHVEN, 112 W. Adams St., Chicago, Ill.....	1883
DUTCHER, WILLIAM, 949 Park Ave., Plainfield, N. J.....	(1883)1886
DWIGHT, DR. JONATHAN, 43 W. 70th St., New York, N. Y.....	(1883)1886
FISHER, DR. ALBERT K., Biological Survey, Washington, D. C....	Founder
FISHER, Prof. WALTER K., Hopkins Marine Sta., Pacific Grove, Calif.	(1899)1905
FLEMING, JAMES H., 267 Rusholme Road, Toronto, Ontario...	(1893)1916
FORBUSH, EDWARD H., State House, Boston, Mass.....	(1887)1912
FUERTES, LOUIS A., Cornell Heights, Ithaca, N. Y.....	(1891)1912
GRINNELL, DR. GEORGE BIRD, 238 E. 15th St., New York, N. Y.....	1883
GRINNELL, DR. JOSEPH, Mus. Vert. Zool., Univ. Calif., Berkeley, Calif.	(1894)1901
JONES, LYND, Spear Laboratory, Oberlin, Ohio.....	(1888)1905
LOOMIS, LEVERETT M., Cal. Acad. Sci., San Francisco, Calif....	(1883)1892
LUCAS, DR. FREDERIC A., Am. Mus. Nat. Hist., New York, N. Y.	(1888)1892

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* Life Fellow.

- MAILLIARD, JOSEPH, 1815 Vallejo St., San Francisco, Calif... (1895)1914
- MCATEE, WALDO LEE, Biological Survey, Washington, D. C... (1903)1914
- *MCGREGOR, RICHARD C., Bureau of Science, Manila, P. I.... (1889)1907
- MERRIAM, DR. C. HART, 1919 16th St., N. W. Washington, D. C. Founder
(1896)1914
- NEHRLING, H., Gotha, Fla.....1883
- NELSON, E. W., Biological Survey, Washington, D. C.....1883
- OBERHOLSER, DR. HARRY C., Biological Survey, Washington, D. C.
(1888)1902
- OSGOOD, DR. WILFRED H., Field Museum Nat. Hist., Chicago, Ill.
(1893)1905
- *PALMER, DR. T. S., 1939 Biltmore St., N. W., Washington, D. C. (1888)1901
- PALMER, WILLIAM, U. S. National Museum, Washington, D. C. (1888)1898
- RICHMOND, DR. CHARLES W., U. S. National Museum, Washington,
D. C..... (1888)1897
- RIDGWAY, DR. ROBERT, U. S. Nat. Mus., Washington, D. C.... Founder
- RILEY, JOSEPH H., U. S. Nat. Mus., Washington, D. C..... (1897)1919
- ROBERTS, DR. THOMAS S., Univ. of Minnesota, Minneapolis, Minn... 1883
- *SAGE, JOHN H., Portland, Conn.....1883
- SAUNDERS, WILLIAM E., 240 Central Ave., London, Ontario..... 1883
- SHUFELDT, DR. ROBERT W., 3356 18th St., N. W., Washington, D. C.
Founder
- STONE, DR. WITMER, Acad. Nat. Sciences, Philadelphia, Pa.... (1885)1892
- SWARTH, HARRY S., Mus. Vert. Zoology, Univ. of California, Berke-
ley, Calif..... (1900)1916
- TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada
(1902)1917
- TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa..... (1890)1916
- WETMORE, DR. ALEXANDER, Biol. Survey, Washington, D. C.. (1908)1919
- WIDMANN, OTTO, 5105 Enright Ave., St. Louis, Mo.....1884

RETIRED FELLOWS.

- HENSHAW, HENRY W., The Ontario, Washington, D. C..... (1883)1918
- LAWRENCE, NEWBOLD T., Lawrence, N. Y..... (1883)1913
- STEJNEGER, DR. LEONHARD, U. S. Nat. Mus., Washington, D. C. (1883)1911

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(1907)1916
- DABBENE, DR. ROBERTO, Museo Nacional, Buenos Aires, Argentina
(1916)1918

* Life Fellow.

DUBOIS, Dr. ALPHONSE, Villa Rayon de Soleil, Coxyde sur Mer, Belgium.....	(1884)1911
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GADOW, Dr. HANS FRIEDRICH, Cleramendi, Great Shelford, near Cambridge, England.....	(1884)1916
HAAGNER, ALWYN KARL, Zoölogical Gardens, Box 754, Pretoria, Transvaal, South Africa.....	(1916)1918
HARTERT, Dr. ERNST J. O., Zoological Museum, Tring, Herts, England.....	(1891)1902
HELLMAYR, Dr. CARL E., Neuhauserstrasse 51.II, Munich, Germany.....	(1903)1911
IHERING, Dr. HERMANN VON, Caixa Postal No. 9, Florianopolis, Estado de Sta. Catarina, Brazil.....	(1902)1911
LÖNNBERG, Dr. A. J. EINAR, Naturhistoriska Riksmuseum, Vetenskapsakademien, Stockholm, Sweden.....	(1916)1918
MÉNÉGAUX, Dr. HENRI AUGUSTE, Museum d'Histoire Naturelle, 55 Rue de Buffon, Paris, France.....	(1916)1918
PYCRAFT, WILLIAM PLANE, British Museum (Nat Hist.) Cromwell Road, London, S. W., 7, England.....	(1902)1911
REICHENOW, Dr. ANTON, Königl. Mus. für Naturkunde, Invalidenstrasse, 43, Berlin.....	(1884)1891
ROTHSCHILD, Lord LIONEL WALTER, Zoological Museum, Tring, Herts, England.....	(1898)1913
SALVADORI, Count TOMMASO, Royal Zoöl. Museum, Turin, Italy.....	1883
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SUSCHKIN, Dr. PETER, University, Kharkov, Russia.....	(1903)1918
VAN ORT, Dr. E. D., Mus. Nat. Hist., Leyden, Holland.....	(1913)1919

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CHAMBERLAIN, MONTAGUE, Cambridge, Mass..... (Founder).....	1901
CHUBB, CHARLES, British Museum (Nat. Hist.) Cromwell Road, Lon- don, S. W., 7, England.....	1911
CLARKE, WILLIAM EAGLE, Royal Scottish Museum, Edinburgh.....	1889
COLLINGE, DR. WALTER E., 3 Queen's Terrace, St. Andrews, Scotland.....	1918
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DOLE, SANFORD B., Honolulu, Hawaii.....	1883
ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna, Austria.....	1883
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GEE, NATHANIEL GIST, Soochow Univ., Soochow, China.....	1919
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GYLDENSTOLPE, COUNT NILS, Naturhistoriska Riksmuseum, Vetén- skapsakademien, Stockholm, Sweden.....	1918
HALL, ROBERT, Tasmanian Museum, Hobart, Tasmania.....	1916
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HENSON, HARRY V., Yokohama, Japan.....	1888
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KLOSS, CECIL BODEN, Kuala Lumpur, Federated Malay States.....	1918

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LE SOUËF, DUDLEY, Zoological Gardens, Melbourne, Australia.....	1911
LOWE, DR. PERCY R., British Mus. (Nat. Hist.), Cromwell Road, London, S. W. 7, England.....	1916
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 Islands.....(1898)1901
 BRYANT, Dr. HAROLD CHILD, Mus. Vert. Zoöl., Berkeley, Calif. (1913)1918
 BURNS, FRANK L., Berwyn, Pa.....(1891)1901
 BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind.
 (1885)1901
 CHAMBERS, W. LEE, Box 4, Eagle Rock, Calif.....(1907)1913
 CHAPIN, JAMES P., Amer. Mus. Nat. Hist., New York, N. Y..(1906)1917
 CHERRIE, GEORGE K., Newfane, Vt. (1891-1912).....(1917)1918
 CLARK, Dr. HUBERT LYMAN, Mus. Comparative Zool. Cambridge,
 Mass.(1886)1902
 DAGGETT, FRANK S., Museum, Exposition Park, Los Angeles, Calif.
 (1889)1901
 DAWSON, WM. L., R. D. 3, Box 110, Santa Barbara, Calif.....(1895)1905
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 EATON, Prof. ELON HOWARD, 678 Main St., Geneva, N. Y....(1895)1907

- EVERMANN, Prof. BARTON W., Calif. Acad. Sci., San Francisco, Calif.
(1883)1901
- FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....(1904)1919
- FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore....(1904)1907
- GAULT, BENJAMIN TRUE, 2313 Washington Bl'vd., Chicago, Ill. (1885)1903
- GOLDMAN, EDWARD A., Biological Survey, Washington, D. C. (1897)1902
- GRISCOM, LUDLOW, 37 5th Ave., New York, N. Y.....(1908)1918
- HARPER, FRANCIS, 3101 24th St., N. E., Washington, D. C....(1907)1917
- *HARRIS, HARRY, Kansas City, Mo.....(1911)1919
- HERRICK, Prof. FRANCIS H., Adelbert College, Cleveland, O... (1913)1919
- HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass.....(1911)1916
- HOFFMAN, RALPH, Siamasia, Montecito, Santa Barbara, Calif. (1893)1901
- HOLLISTER, NED, Nat. Zoölogical Park, Washington, D. C....(1894)1910
- HOWELL, A. BRAZIER, 268 S. Orange Grove Ave., Pasadena, Calif.
(1909)1916
- HOWELL, ARTHUR H., 2919 S. Dakota Ave., Washington, D. C. (1889)1902
- JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa.. (1889)1904
- JEFFRIES, WILLIAM A., 11 Pemberton Square, Boston, Mass... (1883)1901
- JOB, HERBERT K., 291 Main St., West Haven, Conn.....(1896)1901
- KALMBACH, EDWIN R., Biological Survey, Washington, D. C.. (1910)1915
- *KENNARD, F. H., Dudley Road, Newton Centre, Mass.....(1892)1912
- KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C.....(1883)1902
- LAW, J. EUGENE, Mus. Vert. Zool., Berkeley, Calif.....(1907)1916
- MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass....(1890)1901
- MAILLIARD, JOHN W., 230 California St., San Francisco, Calif. (1895)1901
- MOORE, ROBERT THOMAS, Onawa, Me.....(1898)1914
- MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa.....(1887)1903
- MORRIS, ROBERT O., 82 Temple St., Springfield, Mass.....(1888)1904
- MURDOCH, JOHN, 16 High Rock Way, Allston, Mass.....(1883)1901
- MURPHY, ROBERT C., Museum Brooklyn Institute, Eastern Parkway,
Brooklyn, N. Y.....(1905)1914
- NICHOLS, JOHN T., Am. Mus. Nat. Hist., New York, N. Y....(1901)1914
- NORTON, ARTHUR H., Mus. Nat. Hist., 22 Elm St., Portland, Me. (1890)1902
- PEARSON, T. GILBERT, 1974 Broadway, New York, N. Y.....(1891)1902
- PENARD, THOMAS E., 12 Norfolk R'd, Arlington, Mass.....(1912)1919
- PETERS, JAMES LEE, Harvard, Mass.....(1904)1918
- PHILLIPS, Dr. JOHN C., Wenham, Mass.....(1904)1912
- PREBLE, EDWARD A., Biological Survey, Washington, D. C....(1892)1901
- RATHBURN, SAMUEL F., 304 Marion Bldg., Seattle, Wash.....(1893)1902
- RHOADS, SAMUEL N., 81 Haddon Ave., Haddonfield, N. J....(1885)1901
- RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C
(1885)1901
- ROBINSON, Col. WIRT, U. S. A., West Point, N. Y.....(1897)1901
- SETON, ERNEST THOMPSON, Greenwich, Conn.....(1883)1901
- *SHERMAN, Miss ALTHEA R., National via McGregor, Iowa....(1907)1912

*SHIRAS, Hon. GEORGE, 3d, Stoneleigh Court, Washington, D.C.	(1907)1915
STEPHENS, FRANK, Nat. Hist. Museum, Balboa Park, San Diego, Calif.	(1883)1901
STRONG, Dr. REUBEN M., 706 S. Lincoln St., Chicago, Ill.	(1889)1903
*SWALES, BRADSHAW HALL, U.S. Nat. Mus., Washington, D.C.	(1902)1909
THAYER, JOHN ELIOT, Lancaster, Mass.	(1898)1905
TOWNSEND, Dr. CHARLES H., Aquarium, Battery Park, New York, N. Y.	(1883)1901
TOWNSEND, Dr. CHARLES WENDELL, 98 Pinckney St., Boston, Mass.	(1901)1905
TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa.	(1888)1901
TYLER, Dr. WINSOR M., 522 Mass. Ave., Lexington, Mass.	(1912)1917
WARREN, EDWARD ROYAL, 1511 Wood Ave., Colorado Springs, Colo.	(1902)1910
WAYNE, ARTHUR T., Mt. Pleasant, S. C.	(1905)1906
WILLETT, GEORGE, 2123 Court St., Los Angeles, Calif.	(1912)1913
WILLIAMS, ROBERT WHITE, Dept. Agric., Washington, D. C. . . .	(1900)1918
WOLCOTT, Dr. ROBERT H., State University, Lincoln, Neb.	(1901)1903
WOOD, NORMAN A., Museum Univ. of Mich. Ann Arbor, Mich.	(1904)1912
WRIGHT, Dr. ALBERT H., Upland R'd, Ithaca, N. Y.	(1906)1919
WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn.	1895(1901)

ASSOCIATES

ABBOTT, CLINTON GILBERT, Orchard Hill, Rhinebeck, N. Y.	1898
ABBOTT, Miss FLORENCE I., Upland Road, Andover, Mass.	1917
ABBOTT, Miss HARRIET, Fryeburg, Me.	1918
ADAMS, BENJAMIN, Wethersfield, Conn.	1911
ADAMS, Dr. Z. B., 43 Cottage Farm Rd., Longwood, Mass.	1908
ADELMANN, HOWARD BERNHARDT, 221 Spring St., Buffalo, N. Y. . . .	1919
AIKEN, Hon. JOHN, Superior Court, Court House, Boston, Mass. . . .	1905
AIMAR, Dr. CHARLES PONS, 4 Vanderhorst St., Charleston, S. C. . . .	1916
ALBRIGHT, HORACE MARDEN, Yellowstone Park, Wyo.	1919
*ALEXANDER, Miss ANNIE M., Suisun City, Calif.	1911
ALEXANDER, EDWARD GORDON, 1633 South St., Lexington, Mo.	1919
ALLAMAN, RANSOM PERRY, R. D. 4, Bedford, Pa.	1918
ALLEN, Mrs. AMELIA SANBORN, 37 Mosswood Rd., Berkeley, Calif. . .	1919
ALLEN, ARTHUR F., Sioux City, Iowa.	1919
ALLEN, MARY P., 206 Moore St., Hackettstown, N. J.	1913
ALMY, Mrs. CHARLES, 147 Brattle St., Cambridge, Mass.	1919

* Life Member.

ANDERSON, EDWIN C., Dell's Rapids, S. D.....	1919
ANDERSON, ERNEST M., Provincial Museum, Victoria, B. C.....	1915
ANDERSON, MRS. J. C., Great Barrington, Mass.....	1903
ANDREWS, WILLIAM, Courtney, Jackson Co., Mo.....	1919
ANGELL, WALTER A., 135 Mathewson St., Providence, R. I.....	1901
ANTHONY, H. E., Amer. Mus. Nat. Hist., New York, N. Y.....	1911
APPEL, W. D., 4119 Houston Ave., Norwood, Ohio.....	1917
ARMITAGE, LUCIUS, 282 E. 162 St., New York, N. Y.....	1918
ARMSTRONG, EDWARD E., 2249 Calumet Ave., Chicago, Ill.....	1904
ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.....	1894
ARNOLD, DR. W. W., 504 N. Nevada Ave., Colorado Springs, Colo...	1910
ARTHUR, EDMUND WAITE, Cheswick, Pa.....	1919
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ATHERTON, EDWARD H., 82 Ruthven St., Grove Hall, Mass.....	1917
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AYRES, MISS MARY ADELINE, 119 High St., Medford, Mass.....	1915
BABCOCK, DEAN, Long's Peak, Colo.....	1911
BABCOCK, HAROLD LESTER, Woodleigh Road, Dedham, Mass.....	1916
BACHRACH, MRS. BENJAMIN, 1437 West Main St., Decatur, Ill.....	1918
BACON, FRANCIS L., 236 Winona Ave., Germantown, Pa.....	1917
BADÉ, DR. WM. FREDERIC, 2616 College Ave., Berkeley, Calif.....	1916
BADGER, ARTHUR C., 167 Dudley Road, Newton Centre, Mass.....	1917
BAGG, AARON C., 70 Fairfield Ave., Holyoke, Mass.....	1916
BAGG, EGBERT, JR., 27 Sunset Place, Utica, N. Y.....	1916
BAGG, JOHN LEONARD, 89 Lexington Ave., Holyoke, Mass.....	1918
BAILEY, ALFRED M., La. State Mus., New Orleans, Louisiana.....	1918
BAILEY, PROF. GUY A., Geneseo, N. Y.....	1910
BAILEY, SAMUEL WALDO, 64 S. Mountain Rd., Pittsfield, Mass.....	1909
BAIRD, MISS KATHERINE BRUCE, 815 Webster St., N. W., Washington, D. C.....	1918
BAKER, JOHN H., 1007 Riverside Drive, Dayton, Ohio.....	1911
BALDWIN, S. PRENTISS, 2930 Prospect Ave., Cleveland, Ohio.....	1917
BALES, DR. BLENN R., 149 W. Main St., Circleville, Ohio.....	1907
BALL, MRS. BENNET F., Oakville, Conn.....	1905
BALL, EDWARD M., East Falls Church, Va.....	1918
BALL, DR. JAS. P., 5001 Frankford Ave., Philadelphia, Pa.....	1911
BARBOUR, REV. ROBERT, Y. M. C. A., Montclair, N. J.....	1902
BARKER, MISS HELEN, 421 E. Adams St., Sandusky, O.....	1918
BARNARD, JUDGE JOB, 1401 Fairmont St., Washington, D. C.....	1886
BARNES, CLAUDE T., 359 Tenth Ave., Salt Lake City, Utah.....	1908
BARNES, HON. R. MAGOON, Lacon, Ill.....	1889
BARRETT, CHAS. H. M., 1339 Valley Place, S. E., Washington, D. C.....	1912
BARRETT, HAROLD LAWRENCE, 172 Huntington Ave., Boston, Mass.....	1909
BARRY, MISS ANNA K., 5 Bowdoin Ave., Dorchester, Mass.....	1907

BARTLETT, Miss MARY F., 227 Commonwealth Ave., Boston, Mass..	1912
BARTRAM, EDWIN B., 200 N. 3rd St., Philadelphia, Pa.....	1913
BASSETT, FRANK NEWTON, 1338 8th St., Alameda, Calif.....	1919
BATCHELOR, MARION C., 27 Janssen Pl., Kansas City, Mo.....	1916
BATES, Rev. J. M., Red Cloud, Neb.....	1918
BATTEN, GEORGE, Elm Meadow Farm, Caldwell, N. J.....	1914
BAYNES, ERNEST HAROLD, Meriden, N. H.....	1918
BECKFORD, ARTHUR W., 10 Park St., Danvers, Mass.....	1919
BELL, Dr. W. B., Biological Survey, Washington, D. C.....	1912
BENNETT, Rev. GEORGE, Iowa City, Iowa.....	1913
BENNETTS, WILLIAM J., 1941 1st St., N. W., Washington, D. C....	1901
BERMAN, DANIEL, 70 Morningside Drive, New York, N. Y.....	1919
BICKNELL, Mrs. F. T., 319 S. Normandie Ave., Los Angeles, Calif...	1913
BIDDLE, Miss EMILY WILLIAMS, 2201 Sansom St., Philadelphia, Pa...	1898
BIGELOW, Mrs. A. P., Ogden, Utah.....	1919
BIGELOW, Dr. LYMAN F., 80 Winter St., Norwood, Mass.....	1914
BISHOP, SHERMAN C., N. Y. State Museum, Albany, N. Y.....	1919
BLACK, ANDREW A., Margaret, Man., Canada.....	1919
BLACKWELDER, ELIOT, 317 Railway Exch. Bldg., Denver, Colo.....	1895
BLOOMFIELD, Mrs. C. C., 723 Main St., W. Jackson, Mich.....	1901
BOARDMAN, Miss E. D., 416 Marlborough St., Boston, Mass.....	1906
BODINE, Mrs. DONALDSON, 4 Mills Place, Crawfordsville, Ind.....	1916
BOEHNER, REGINALD STEPHEN, Syracuse Univ., Syracuse, N. Y....	1919
BOGARDUS, Miss CHARLOTTE, Elm St., Coxsackie, N. Y.....	1909
BOLLES, Mrs. FRANK, 6 Berkeley St., Cambridge, Mass.....	1912
BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo...	1909
BOND, HARRY L., Lakefield, Minn.....	1908
BONFILS, FREDERICK G., The Denver Post, Denver, Colo.....	1918
BORLAND, WM. G., 7 Wall St., New York, N. Y.....	1911
BOSSON, CAMPBELL, 30 State St., Boston, Mass.....	1906
*BOULTON, WM. B., Morristown Trust Co., Morristown, N. J.....	1919
BOURNE, THOMAS L., Hamburg, N. Y.....	1913
BOWDISH, B. S., Demarest, N. J.....	1891
BOWDISH, Mrs. B. S., Demarest, N. J.....	1902
BOWDITCH, Dr. HAROLD, 44 Harvard Ave., Brookline, Mass.....	1900
BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.....	1913
BOYD, Mrs. HARRIET T., 17 Marsh St., Dedham, Mass.....	1917
BOYLE, HOWARTH S., Amer. Mus. Nat. Hist., New York, N. Y.....	1916
BRACKEN, Mrs. HENRY M., 1010 Fourth St., S.E., Minneapolis, Minn.	1897
BRADBURY, W. C., 1440 Race St., Denver, Colo.....	1915
BRADLEE, THOMAS STEVENSON, South Sudbury, Mass.....	1902
BRANDRETH, COURTNEY, Ossining, N. Y.....	1905
*BRANDRETH, FRANKLIN, Ossining, N. Y.....	1889

* Life Associate.

BRANDT, HERBERT W., 2025 East 88th St., Cleveland, Ohio.....	1915
BRANNON, PETER A., Box 358, Montgomery, Ala.....	1919
BREDER, CHAS. M., JR., Inquiry Div., Bureau Fisheries, Washington, D. C.....	1919
BREWSTER, MRS. WILLIAM, 145 Brattle St., Cambridge, Mass.....	1912
BRIDGE, EDMUND, 52 Wyman St., West Medford, Mass.....	1910
*BRIDGE, MRS. EDMUND, 52 Wyman St., West Medford, Mass.....	1902
BRIGGS, HARRY T., 5 Hoffman Ave., Poughkeepsie, N. Y.....	1919
BRIMLEY, H. H., State Museum, Raleigh, N. C.....	1904
BRITTEN, Capt. G. S., 807 Walnut Ave., Syracuse, N. Y.....	1913
BROCKWAY, ARTHUR W., Hadlyme, Conn.....	1912
BROOKS, REV. EARLE AMOS, 10 Beacon St., Everett, Mass.....	1892
BROOKS, GORHAM, 60 State St., Boston, Mass.....	1919
BROWN, MISS ANNIE H., 31 Maple St., Stoneham, Mass.....	1909
BROWN, MISS BERTHA L., 53 Court St., Bangor, Me.....	1918
BROWN, EDWARD J., 1609 S. Van Ness Ave., Los Angeles, Calif.....	1891
BROWN, G. FRANKLIN, "Stonebridge," Needham, Mass.....	1917
BROWN, HARRY A., 40 Talbot St., Lowell, Mass.....	1912
BROWN, MRS. HENRY TEMPLE, Lancaster, Mass.....	1912
BROWN, PHILIP G., 85 Vaughan St., Portland, Me.....	1911
BROWN, ROY M., Boone, N. C.....	1919
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.....	1895
BROWN, WM. JAMES, 250 Oliver Ave., Westmount, Quebec.....	1908
BROWNING, WM. HALL, 16 Cooper Square, New York, N. Y.....	1911
BRUEN, FRANK, 69 Prospect St., Bristol, Conn.....	1908
BRUMBAUGH, CHALMERS S., 1020 Cathedral St., Baltimore, Md.....	1916
*BRUUN, CHAS. A., 314 Reliance Bldg., Kansas City, Mo.....	1919
BUCHANAN, ROLLIN E., Excelsior, Minn.....	1918
BUNKER, CHARLES D., Kansas University Museum, Lawrence, Kan.....	1916
BURGESS, JOHN KINGSBURY, "Broad Oak," Dedham, Mass.....	1898
BURGESS, THORNTON WALDO, 61 Washington R'd., Springfield, Mass.....	1919
BURLEIGH, THOS. D., 825 N. Negley Ave., Pittsburg, Pa.....	1913
BURNETT, WILLIAM L., State Agric. College, Fort Collins, Colo.....	1895
BURNHAM, STEWART HENRY, Hudson Falls, N. Y.....	1919
BURTCH, VERDI, Branchport, N. Y.....	1903
BUSHINGER, MISS MARY G., Monte Vista, Colo.....	1919
BUTLER, MISS VIRGINIA, Stockbridge, Mass.....	1919
BUTTERWORTH, FRANK SEILER, Choate School, Wallingford, Conn.....	1918
BUZZELL, MRS. JAS. C., 11 Hudson St., Bangor, Me.....	1918
BYRD, MRS. HIRAM, Oxford, Miss.....	1918
CADUC, EUGENE E., 512 Massachusetts Ave., Boston, Mass.....	1910
CADY, Prof. WALTER GUYTON, 49 High St., Middletown, Conn.....	1916
CAHN, ALVIN R., 4720 Greenwood Ave., Chicago, Ill.....	1917

* Life Associate.

Calender, James Philips, 32 Broadway, New York, N. Y.....	1903
Calvert, Earl W., c/o. J. W. Noble, Harrow, Ont., Canada.....	1919
Campbell, Mrs. Editha S., 263 W. 7th St., Erie, Pa.....	1917
Campini, Chas A., 154 E. 33rd St., New York, N. Y.....	1919
Cantwell, Geo. G., 901 W. Main Ave., Puyallup, Wash.....	1916
Capling, Miss Ethel B., Wiseton, Sask.....	1918
Carpenter, Rev. Charles Knapp, 1724 Sunnyside Ave., Chicago,	
III.....	1894
Carpenter, George I., 129 Dean St., Brooklyn, N. Y.....	1907
Carriger, H. W., 5185 Trask St., Fruitvale Station, Oakland, Calif.....	1913
Carroll, Mrs. Olivia Garnsey, Rutland, Mass.....	1918
Carryl, Frank M., 20 Burnett St., Maplewood, N. J.....	1919
Carter, John D., Lansdowne, Pa.....	1907
Cash, Harry A., 420 Hope St., Providence, R. I.....	1898
Caswell, Mrs. Arthur E., 241 Union St., Athol, Mass.....	1918
Chamberlain, Chauncy W., 36 Lincoln St., Boston, Mass.....	1885
Chapman, Mrs. F. M., Englewood, N. J.....	1908
Chase, Richard Morton, 164 Westminster R'd., Rochester, N. Y.....	1919
Chase, Sidney, 25 Ames Bldg., Boston, Mass.....	1904
Cheesman, Morton R., 2703 Ocean Front, Ocean Park, Calif.....	1911
Childs, Henry Everett, 864 Broadway, E. Providence, R. I.....	1919
Claget, Chas W., Washington College, Chestertown, Md.....	1918
Clark, Austin Hobart, 1818 Wyoming Ave., Washington, D. C....	1919
Clark, Clarence H., Lubec, Me.....	1913
Clark, Josiah H., 238 Broadway, Paterson, N. J.....	1895
Clarke, Charles E., 51 Summit R'd, Medford, Mass.....	1907
Clarke, Miss Harriet E., 9 Chesnut St., Worcester, Mass.....	1896
Clarke, Miss Mary S., Silver Springs, Md.....	1916
Clarke, Miss Rowena A., Kirkwood, Mo.....	1919
Cleaves, Howard H., Conservation Comm., Albany, N. Y.....	1907
Clements, Miss Jennie, 508 S. Main St., Independence, Mo.....	1919
Cleveland, Dr. Clement, 925 Park Ave., New York, N. Y.....	1903
Cleveland, Miss Lilian, Woods Edge R'd., West Medford, Mass...	1906
Coale, Henry K., Highland Park, Ill.....	1883
Cobb, Miss Annie W., 72 Oxford St., Arlington, Mass.....	1909
Cobb, Philip Hacker, Loomis Inst., Windsor, Conn.....	1917
Cobb, Dr. Stanley, Ponkapog, Mass.....	1909
Coffin, Mrs. Percival B., 3232 Ellis Ave., Chicago, Ill.....	1905
Coffin, Robert L., Mass. Agric'l Exp. Sta., Amherst, Mass.....	1917
Coggins, Herbert L., 2929 Piedmont Ave., Berkeley, Calif.....	1913
Colburn, Albert E., 806 S. Broadway, Los Angeles, Calif.....	1891
Cole, Dr. Leon J., College of Agric., Univ. of Wis., Madison, Wis...	1908
Commons, Mrs. F. W., 608 Chamber of Commerce, Minneapolis, Minn.	1902
Cone, Mrs. Henry F., 4 Trinity St., Hartford, Conn.....	1917
Conger, Allen C., Box 561 E. Lansing, Mich.....	1919
Conger, Paul Sidney W., Prairie du Sac, Wis.....	1918

COOK, FREDERICK W., 1604 East Harrison St., Seattle, Wash.....	1915
COOK, MISS LILIAN GILLETTE, Long Lea Farm, Amherst, Mass.....	1899
COOKE, MISS MAY THACHER, 1328 Twelfth St., Washington, D. C....	1915
COOLIDGE, PHILIP T., 31 Central St., Bangor, Me.....	1919
COPE, FRANCIS R., JR., Dimock, Pa.....	1892
COPELAND, MISS ADA B., 1103 White Ave., Grand Junction, Colo....	1917
COPELAND, MANTON, 88 Federal St., Brunswick, Me.....	1900
COURSSEN, BLAIR, Univ of Chicago, Chicago, Ill.....	1918
COURT, EDWARD J., 1723 Newton St., N. W., Washington, D. C....	1919
COVELL, DR. HENRY H., 1600 East Ave., Rochester, N. Y.....	1918
COX, RODMAN DAYTON, Y. M. C. A., Rochester, N. Y.....	1919
CRAIG, WALLACE, Univ. of Maine, Orono, Me.....	1912
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....	1893
CRANDALL, LEE S., N. Y. Zoöl. Park, New York, N. Y.....	1909
CRANE, MISS CLARA L., Dalton, Mass.....	1904
CRANE, MRS. ZENAS, Dalton, Mass.....	1904
CRAVEN, ALLAN B., 3 Spruce St., Boston, Mass.....	1919
CRIDDLE, NORMAN, Trusbank, Man.....	1918
CROCKETT, REV. GEO. R., Dixon, S. D.....	1919
CROSBY, MAUNSELL S., Rhinebeck, N. Y.....	1904
CROSS, ALBERT ASHLEY, Huntington, Mass.....	1918
CROWELL, MISS J. OLIVIA, Dennis, Mass.....	1918
CUDWORTH, WARREN H., Assonet, Mass.....	1919
CUMMINGS, MISS EMMA G., 16 Kennard Road, Brookline, Mass.....	1903
CUNNINGHAM, J. WALTER, 3009 Dunham Ave., Kansas City, Mo....	1919
CURRIER, EDMONDE SAMUEL, 416 E. Chicago St., Portland, Ore....	1894
CURRIE, ROLLO P., 632 Keefer Pl., Washington, D. C.....	1895
CURRY, HASKELL BROOKS, 60 Bay State Road, Boston, Mass.....	1916
CURTIS, CHARLES P., 244 Beacon St., Boston, Mass.....	1915
CURTIS, ROY Q., JR., 11 W. 76th St., New York, N. Y.....	1919
CUSHMAN, MISS ALICE, 919 Pine St., Philadelphia, Pa.....	1910
DANE, MRS. ERNEST B., Chesnut Hill, Mass.....	1912
DANFORTH, STUART T., 115 N. 6th Ave., New Brunswick, N. J.....	1916
DANIELS, EDWARD S., 3869 A Conn. Ave., St. Louis, Mo.....	1919
DAVENPORT, MRS. ELIZABETH B., Brattleboro, Vt.....	1898
DAY, CHESTER SESSIONS, 15 Custom House St., Boston, Mass.....	1897
DEAN, F. ROY, 3465 S. Spring Ave., St. Louis, Mo.....	1919
DEAN, R. H., 720 Quintard Ave., Anniston, Ala.....	1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....	1899
DEARBORN, SAMUEL S., 9 Massachusetts Ave., Boston, Mass.....	1919
DECKER, HAROLD K., 1848 Washington Ave., New York, N. Y.....	1916
DELOACH, R. J. H., 10154 Longwood Drive, Chicago, Ill.....	1910
DENSMORE, MISS MABEL, 910 4th St., Red Wing, Minn.....	1910
DENT, PAUL, 3714 West Pine B'lv'd, St. Louis, Mo.....	1919
DERBY, RICHARD, 116 E. 79th St., New York, N. Y.....	1898
DEWEY, DR. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.....	1900

DEXTER, Prof. JOHN SMITH, Univ. Sask., Saskatoon, Sask.....	1919
DEXTER, LEWIS, 1889 Elm St., Manchester, N. H.	1915
DICE, LEE RAYMOND, Mus. Zool., Ann Arbor, Mich.....	1918
DICKEY, DONALD R., San Rafael Heights, Pasadena, Calif.....	1907
DILLE, FREDERICK M., Niobrara Reservation, Valentine, Neb.....	1892
DINGS, McCLELLAND, 5715 Enright Ave., St. Louis Mo.....	1919
DIONNE, C. E., Laval University, Quebec, Canada.....	1893
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.....	1891
DIXON, JOSEPH S., Univ. of Cal., Berkeley, Calif.....	1917
DOANE, GILBERT HARRY, 113 Second St., Newport, R. I.....	1919
DONAHUE, RALPH J., Bonner Springs, Kan.....	1919
DRIER, THEODORE, 35 Remsen St., Brooklyn, N. Y.....	1919
DRUMMOND, Miss MARY, 510 Spring Lane, Lake Forest, Ill.....	1904
DUBOIS, ALEXANDER D., 560 W. Monroe St., Chicago, Ill.....	1918
DULL, Mrs. A. P. L., 211 N. Front St., Harrisburg, Pa.....	1900
DUNBAR, Miss LULA, R. D. 1, Elkhorn, Wis.....	1918
DURAND, Miss LAURA B., 11 Oriole Gardens, Toronto, Ont.....	1919
DURFEE, OWEN, Box 125, Fall River, Mass.....	1887
DURYEA, Miss ANNIE B., 62 Washington St., Newark, N. J.....	1911
DYKE, ARTHUR CURTIS, 205 Summer St., Bridgewater, Mass.....	1902
EARL, D. OSBOURNE, 17 Bates St., Cambridge, Mass.....	1919
EASTMAN, Major FRANCIS B., Camp Grant, Ill.....	1909
*EATON, HOWARD, Wolf, Sheridan Co., Wyo.....	1918
EATON, Miss MARY S., 8 Monument St., Concord, Mass.....	1909
EATON, SCOTT HARRISON, Box 653, Lawrenceville, Ill.....	1912
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....	1886
EDSON, WM. L. G., 54 Fairview Ave., Rochester, N. Y.....	1916
EDWARDS, KATHERINE M., Wellesley College, Wellesley, Mass.....	1918
EHINGER, Dr. CLYDE E., 100 W. Rosedale Ave., West Chester, Pa...	1904
EIFRIG, Prof. C. W. GUSTAVE, 504 Monroe Ave., Oak Park, Ill.....	1901
EIMBECK, Dr. AUGUST F., New Haven, Mo.....	1906
EKBLAW, SIDNEY E., R. F. D. 23, Rantoul, Ill.....	1918
EKBLAW, WALTER ELMER, 713 W. Washington Blv'd., Urbana, Ill...	1911
ELDRIDGE, ARTHUR S., South Lincoln, Mass.....	1912
ELIOT, WILLARD AYRES, 1011 Thurman St., Portland, Ore.....	1918
ELLIOT, Mrs. J. W., 124 Beacon St., Boston, Mass.....	1912
ELLS, GEORGE P., Norwalk, Conn.....	1904
EMERSON, W. OTTO, Hayward, Calif.....	1916
EMMERICH, ROBERT D., 322 W. 100th St., New York, N. Y.....	1919
ENGLISH, Mrs. T. F., 3631 Campbell St., Kansas City, Mo.....	1919
ENO, HENRY LANE, Princeton, N. J.....	1918
ERICHSEN, W. J., 2311 Barnard St., Savannah, Ga.....	1919
EVANS, Dr. EVAN M., 550 Park Ave., New York, N. Y.....	1916

* Life Associate.

EVANS, WILLIAM B., Moorestown, N. J.....	1897
EYER, GEO. A., Short Hills, N. J.....	1918
FALGER, MRS. WM., c/o. California Nat'l Bank, Modesto, Calif.....	1918
FAUST, CLARENCE, New Middletown, Ohio.....	1919
FAXON, ALLAN HART, 7 Edwards St., Southbridge, Mass.....	1916
*FAY, DUDLEY B., 287 Beacon St., Boston, Mass.....	1916
FAY, S. PRESCOTT, 53 State St., Boston, Mass.....	1907
FELGER, ALVA HOWARD, North Side High School, Denver, Colo.....	1898
FELL, Miss EMMA TREGO, 1534 N. Broad St., Philadelphia, Pa.....	1903
FIELD, Dr. GEORGE W., 2807 18th St., N. W., Washington, D.C.....	1910
FISHER, Miss ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa.....	1896
FISHER, Dr. G. CLYDE, American Mus. Nat. Hist., New York, N. Y.....	1908
FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....	1898
FLEISHER, EDWARD, 539 4th St., Brooklyn, N. Y.....	1916
FLETCHER, LYLE, Norton, Kan.....	1919
FLETCHER, MRS. MARY E., Proctorsville, Vt.....	1898
FLOYD, CHARLES BENTON, 382 Wolcott St., Auburndale, Mass.....	1916
FOOT, Dr. NATHAN CHANDLER, Readville, Mass.....	1916
FOOTE, Miss F. HUBERTA, 260 Valentine Lane, Yonkers, N. Y.....	1897
FORBES, RALPH E., 328 Adams St., Milton, Mass.....	1917
FORD, LEE M., Box 8, Great Falls, Mont.....	1919
FORD, Miss LOUISE PETIGRU, "The Heights," Aiken, S. C.....	1919
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....	1901
FOSTER, FRANCIS A., Edgartown, Mass.....	1918
FOSTER, FRANK B., Haverford, Pa.....	1916
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Calif.....	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....	1898
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....	1883
FRANCIS, NATHANIEL A., 35 Davis Ave., Brookline, Mass.....	1914
FRASER, DONALD, Johnstown, N. Y.....	1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....	1903
FRENCH, CHARLES H., Canton, Mass.....	1904
FRENCH, MRS. CHAS H., Canton, Mass.....	1908
FROST, ALLEN, c. o. Trussell Mfg. Co., Poughkeepsie, N. Y.....	1919
FROTHINGHAM, MRS. RANDOLPH, 113 Commonwealth Ave., Boston, Mass.....	1913
FRY, Rev. HENRY J., 66 Eagle Rock Way, Montclair, N. J.....	1916
*FUGUET, HOWARD, 312 Bullitt Bldg., Philadelphia, Pa.....	1919
FULLER, HENRY C., 1348 Euclid St., Washington, D. C.....	1916
FULLER, Mrs. T. OTIS, Needham, Mass.....	1909
GABRIELSON, IRA N., 220 P. O. Bldg., Portland, Ore.....	1912
GANIER, ALBERT F., 2507 Ashwood Ave., Nashville, Tenn.....	1917

* Life Associate.

GARDINER, CHARLES BARNES, 175 W. Main St., Norwalk, Ohio.....	1903
GARDNER, ASTON COLEBROOK, 1805 Market St., Wilmington, Del....	1919
GARDNER, JAMES H., 626 Kennedy Bldg., Tulsa, Okla.....	1919
GARST, DR. JULIUS, 29 Oread St., Worcester, Mass.....	1916
GASTON, DR. P. K., Pratt, Kan.....	1919
GERTH, WALTER G., 3929 Greenview Ave., Chicago, Ill.....	1918
GERTKEN, PROF. SEVERIN, St. John's University, Collegeville, Minn..	1912
GIANINI, CHAS A., Poland, N. Y.....	1911
GIBSON, LANDGON, 5 Union St., Schenectady, N. Y.....	1887
GILBERT, MRS. F. M., Walpole, N. H.....	1919
GILMAN, M. FRENCH, Banning, Cal.....	1907
GLADDING, MRS. JOHN R., 30 Stimson Ave., Providence, R. I.....	1912
GLEASON, MRS. C. H., 700 Madison Ave., S. E., Grand Rapids, Mich.	1917
GOELITZ, WALTER A., 376 Flower City Park, Rochester, N. Y.....	1916
GOLSAN, LEWIS S., Box 97, Prattville, Ala.....	1912
GOODE, MRS. F. B., Sharon, Mass.....	1918
GOODRICH, MISS JULIET T., 1210 Astor St., Chicago, Ill.....	1904
GORDON, HARRY E., 307 Laburnum Cres., Rochester, N. Y.....	1911
GORMLEY, A. LIGNORI, Box 345, Arnprior, Ont.....	1918
GORST, CHARLES C., 28 Beauford R'd., Jamaica Plain, Boston, Mass.	1916
GOULD, JOSEPH E., Arcadia, Fla.....	1889
GRAHAM, HON. WM. J., Aledo, Ill.....	1909
GRANGER, WALTER, Amer. Mus. Nat. Hist., New York, N. Y.....	1891
GRANT, MRS. ADELE LEWIS, Mo. Bot. Garden, St. Louis, Mo.....	1919
GRANT, WM. W., 600 Castle St., Geneva, N. Y.....	1910
GRAVES, MRS. CHARLES B., 4 Mercer St., New London, Conn.....	1905
GRAY, GEORGE M., Box 89, Woods Hole, Mass.....	1916
GREANOFF, REV. ALBERT EDWARD, 220 Montgomery Ave., W. Pittston, Pa.....	1919
GREEN, HORACE OAKES, 114 North Ave., Wakefield, Mass.....	1917
GREENOUGH, HENRY VOSE, 1134 Beacon St., Brookline, Mass.....	1901
GREGORY, RAYMOND J., Princeton, Mass.....	1917
GREGORY, STEPHEN S., JR., 2609 Hampden St., Chicago, Ill.....	1916
GRIFFEE, WILLET E., Route 3, Corvallis, Ore.....	1919
GRIFFIN, BERTRAM S., 22 Currie Ave., Haverhill, Mass.....	1917
GROW, MRS. EUGENE J., Lebanon, N. H.....	1916
GUINOTTE, JUDGE JULES E., 1215 Manheim R'd., Kansas City, Mo..	1919
GUNTORTH, PROF. HORACE, Washburn College, Topeka, Kan.....	1919
HAAS, ROBERT C., 504 Sweetland Bldg., Cleveland, Ohio.....	1919
HADLEY, ALDEN H., Monrovia, Ind.....	1906
HAGAR, J. A., Marshfield, Hills, Mass.....	1914
HAGER, GEO. W., R. F. D. 3, Peterboro, N. H.....	1917
HAILE, H. PENNINGTON, 28 Edwards St., Springfield, Mass.....	1919
HALL, F. GREGORY, Milton, Wis.....	1917
HALL, WM. WEBSTER, JR., 15 E. 75th St., New York, N. Y.....	1917
HALLINAN, THOMAS, 212 Madison Ave., Paterson, N. J.....	1919

HALLINEN, JOSEPH E., Coopertown, Okla.....	1919
HANDLEY, CHAS. O., Lewisburg, W. Va.....	1916
HANKINSON, THOS. LeROY, N. Y. College of Forestry, Syracuse, N. Y.....	1897
HANNA, G. DALLAS, California Acad. Sci., San Francisco, Calif.....	1919
HANNA, WILSON CREAL, 1000 Pennsylvania Ave., Colton, Calif.....	1919
HARDISTY, ARTHUR H., 2326 First St., N. W., Washington, D. C.....	1918
HARDON, MRS. HENRY W., Wilton, Conn.....	1905
HARRINGTON, MRS. D. H., Lincoln, Mass.....	1919
HARRINGTON, RALPH M., 595 Ashland Ave., Buffalo, N. Y.....	1915
*HARRISON, GEO. L., Jr., 400 Chestnut St., Philadelphia, Pa.....	1919
HARRISON, HARRY MORGAN, 503 Linden St., Camden, N. J.....	1919
HARTLEY, GEO. INNESS, 344 W. 87th St., New York, N. Y.....	1919
HARTSHORN, HAROLD IRA, 53 S. 12th St., Newark, N. J.....	1918
HARVEY, MRS. C. F., Vernon Hall, Kinston, N. C.....	1918
HARVEY, JOHN L., 3 Moody St., Waltham, Mass.....	1916
HASKELL, Miss SADIA, 1236 11th St., N. W., Washington, D. C.....	1916
HATHAWAY, HARRY S., Box 1466, Providence, R. I.....	1897
HAVEMEYER, H. O., Mahwah, N. J.....	1893
HAVEMEYER, H. O., Jr., Mahwah, N. J.....	1919
HEACOCK, Miss ESTHER, Wyncote, Pa.....	1918
HEALEY, ALDEN P., 2006 Northampton St., Holyoke, Mass.....	1919
HEDGES, CHAS. F., 221 N. 9th St., Miles City, Mont.....	1919
HELM, ARTHUR H., Miller Place, N. Y.....	1888
HEMPEL, Miss KATHLEEN, Elkader, Iowa.....	1919
HEMPHILL, ASHTON ERASTUS, Holyoke, Mass.....	1919
*HENDERSON, JOHN BROOKS, 16th St., & Florida Ave., N. W., Wash- ington, D. C.....	1918
HENDERSON, Judge JUNIUS, 627 Pine St., Boulder, Colo.....	1903
HENDERSON, WALTER C., 4727 13th St., N. W., Washington, D. C.....	1917
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNESSEY, FRANK C., 457 Albert St., Ottawa, Ont.....	1914
HERMANN, THEODORE L., 273 Neal Dow Ave., New Brighton, N. Y.....	1916
*HERRICK, HAROLD, 123 William St., New York, N. Y.....	1905
HERRICK, NEWBOLD L., 60 Wall St., New York, N. Y.....	1913
HERRICK, N. LAWRENCE, Cedarhurst, N. Y.....	1917
HIGGINS, A. W., Sandwich, Mass.....	1918
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, MRS. THOMAS R., Box 491, Chautauqua, Chautauqua Co., N. Y.....	1903
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....	1912
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio.....	1899
HIX, GEORGE E., 100 W. 91st St., New York, N. Y.....	1904

* Life Associate.

HOLLAND, HAROLD MAY, Galesburg, Ill.....	1910
HOLLAND, Dr. WILLIAM J., Carnegie Museum, Pittsburg, Pa.....	1899
HOLLISTER, G. B., 4 E. 5th St., New York, N. Y.....	1919
HOLLISTER, WARREN D., 821 Humboldt St., Denver, Colo.....	1901
HOLMAN, RALPH H., 481 Main St., Stoneham, Mass.....	1907
HOLT, ERNEST G., c/o. St'd Oil Co. of Brazil, Sao Paulo, Brazil....	1911
HONYWILL, ALBERT W., Jr., 211 Ridgefield St., Hartford, Conn.....	1907
HORSFALL, ROBERT BRUCE, 1457 E. 18th St., Portland, Ore.....	1905
HORSEY, RICHARD E., Highland P'k Greenhouses, Reservoir Ave., Rochester, N. Y.....	1919
HOTCHKISS, NEIL, Marcellus, N. Y.....	1919
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....	1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.....	1907
HUBBARD, C. ANDRESEN, 1249 E. Harrison St., Portland, Ore.....	1916
HUBBARD, Prof. MARIAN E., 15 Appleby Road, Wellesley, Mass.....	1916
HUBBARD, RALPH, 1038 University Ave., Boulder, Colo.....	1916
HUBER, WHARTON, 225 St. Marks Sq., Philadelphia, Pa.....	1915
HUGHES, GEO. T., Watchung, N. J.....	1919
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J....	1895
HUNT, CHRESWELL JOHN, 5847 W. Superior St., Chicago, Ill.....	1919
HUNT, Miss LUCY O., 185 Beacon St., Hartford, Conn.....	1919
HUNT, RICHARD M., Mus. Vert. Zoöl., Berkeley, Calif.....	1918
HURD, Miss FRANCES A., 43 West Ave., S. Norwalk, Conn.....	1919
HUSHER, Mrs. GERTRUDE H., 821 S. Hope St., Los Angeles, Calif....	1918
HUSSEY, ROLAND F., Univ. of Minn., Minneapolis, Minn.....	1915
HYDE, Mrs. S. E., Regina, Idaho.....	1918
HYSLOP, SAMUEL, 42 Bellevue St., Newton, Mass.....	1919
INGERSOLL, ALBERT M., 908 F St., San Diego, Calif.....	1885
ISHAM, CHAS B., 50 W. 67th St., New York, N. Y.....	1891
JACKSON, Dr. HARTLEY H. T., Biological Survey, Washington, D. C.	1910
JACKSON, RALPH W., R. D. 1, Cambridge, Md.....	1918
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....	1888
JAMES, NORMAN, Catonsville, Md.....	1913
JANVRIN, Dr. E. R. P., 515 Park Ave., New York, N. Y.....	1919
JENKS, CHAS. W., Bedford, Mass.....	1912
JENNEY, Hon. CHARLES F., 100 Gordon Ave., Hyde Park, Mass....	1905
JENNINGS, Dr. GEO. H., Jewett City, Conn.....	1918
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....	1913
JENSEN, J. K., U. S. Indian School, Santa Fe, N. Mex.....	1912
JEWETT, STANLEY G., Pendleton, Ore.....	1906
JOHNSON, Prof. CHAS. EUGENE, Dept. Zoöl., Kan. Univ., Lawrence, Kan.....	1919
JOHNSON, FRANK E., 16 Amackassin Terrace, Yonkers, N. Y.....	1888
JOHNSON, Mrs. GRACE PETTIS, Museum of Nat. Hist., Springfield, Mass.	1908
JONES, Dr. LOMBARD CARTER, Falmouth, Mass.....	1917
JONES, WILLIAM F., Norway, Me.....	1918

JORDAN, A. H. B., Everett, Wash.....	1888
JUMP, MRS. EDWIN R., 97 Oakleigh Road, Newton, Mass.....	1910
JUNKIN, FRANCIS T. A., "Twin Oaks," Woodley Lane, Washington, D. C.....	1917
KAEDING, GEO. L., Battle Mountain, Nev.....	1918
KANE, MRS. SUSAN MARY, Mich. Club Bldg., Seattle, Wash.....	1919
KEYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KELLOGG, RALPH T., Silver City, N. M.....	1913
KELSO, DR. JOHN E. H., Edgewood, Lower Arrow Lake, B. C.....	1915
KENISTON, ALLAN, Vineyard Haven, Mass.....	1917
KENNEDY, DR. HARRIS, Readville, Mass.....	1916
KENT, DUANE E., 47 West St., Rutland, Vt.....	1913
KENT, EDWARD G., 2595 Boulevard, Jersey City, N. J.....	1919
KENT, EDWIN C., 156 Broadway, New York, N. Y.....	1907
*KIDDER, NATHANIEL T., Milton, Mass.....	1906
KILGORE, WILLIAM, JR., 132 Orlin Ave., S. E., Minneapolis, Minn....	1906
KINGSBURY, FREDERICK S., 97 Oliver St., Boston, Mass.....	1916
KING, LEROY, 20 E. 84th St., New York, N. Y.....	1901
KINGMAN, ROBERT H., 11 S. Cedar Ave., Arverne, N. Y.....	1919
KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....	1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....	1910
KIRKWOOD, FRANK C., R. F. D. 3, Monkton, Md.....	1892
KIRN, ALBERT J. B., R. F. D. 4, Solomon, Kan.....	1918
KITTREDGE, JOSEPH, JR., Forest Service, Washington, D. C.....	1910
KLOSEMAN, MISS JESSIE E., Beal Hall, 20 Charlesgate W., Boston, Mass.....	1909
KLOTS, ALEXANDER, 125 W. 78th St., New York, N. Y.....	1919
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....	1906
KNOLHOFF, FERDINAND WILLIAM, Amityville, N. Y.....	1890
KRETZMAN, Prof. P. E., 3337 A Oregon Ave., St. Louis, Mo.....	1913
KUBICHEK, D. P., Biological Survey, Washington, D. C.....	1919
KUSER, ANTHONY R., Bernardsville, N. J.....	1908
KUSER, MRS. ANTHONY R., Bernardsville, N. J.....	1910
KUSER, JOHN DRYDEN, Bernardsville, N. J.....	1910
LABRIE, JOSEPH D., 1717 E. 78th St., Kansas City, Mo.....	1919
LACEY, HOWARD GEORGE, R. F. D. 1, Kerrville, Texas.....	1899
LADD, HARRY STEPHEN, 4354 McPherson Ave., St. Louis, Mo.....	1917
LADOW, STANLEY V., 622 W. 113th St., New York, N. Y.....	1913
LAING, HAMILTON M., 1277 E. 32nd St., Portland, Ore.....	1917
LAMB, CHAS R., 8 Highland St., Cambridge, Mass.....	1912
LANCASHIRE, MRS. JAMES HENRY, 7 East 75th St., New York, N. Y..	1909
LANG, HERBERT, Amer. Mus. Nat. Hist., New York, N. Y.....	1907
LANGDON, ROY M., 958 N. Parkside Ave., Chicago, Ill.....	1918

* Life Associate.

LANO, ALBERT, Fayetteville, Ark.	1919
LARRABEE, Prof. AUSTIN P., Yankton College, Yankton, S. Dak.	1918
LASTRETO, C. B., 260 California St., San Francisco, Calif.	1919
LATHAM, ROY, Orient, N. Y.	1916
LAUGHLIN, J. A., Marshall, Mo.	1919
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.	1902
LAWSON, RALPH, 88 Washington Sq. East, Salem, Mass.	1917
LEAVITT, Mrs. FLORENCE R., 42 Forest St., Lexington, Mass.	1919
LEE, LOHN C., Grove St., Wellesley, Mass.	1917
LEFFINGWELL, DANA J., Aurora, N. Y.	1919
LEISTER, CLAUDE W., McGraw Hall, Ithaca, N. Y.	1916
LEMAN, J. HOWARD, 48 Beacon St., Boston, Mass.	1919
LENGERKE, JUSTUS VON, 211 Highland Ave., Orange, N. J.	1907
LENSEN, Miss RUBY, 53 Maple St., Englewood, N. J.	1919
LEOPOLD, ALDO, 135 S. 14th St., Albuquerque, N. Mex.	1916
LEOPOLD, NATHAN, Jr., 4754 Greenwood Ave., Chicago, Ill.	1916
LEVEY, Mrs. WILLIAM, Alton Bay, N. H.	1915
LEWIS, HARRISON F., P. O. Box 6, Quebec, Canada.	1912
LEWIS, Mrs. HERMAN E., 120 Grove St., Haverhill, Mass.	1912
LIEBOLD, ERNEST G., 94 Rhode I. Ave., Highland Park, Mich.	1918
LIGON, J. STOKLEY, Box 131, Albuquerque, New Mexico.	1912
LINCOLN, FREDERICK CHARLES, Biological Survey, Washington, D. C.	1910
LINDSAY, Dr. D. MOORE, 808 Boston Block, Salt Lake City, Utah.	1919
LINGS, GEO. H., Richmond Hill, Cheshire, England.	1913
LITTLE, LUTHER, 2nd, Cal. Acad. Sci., San Francisco, Calif.	1913
LLOYD, HOYES, 406 Queen St., Ottawa, Canada.	1916
LONG, CHAS. IRVING, 130 5th Ave., Roselle, N. J.	1918
LORD, J. ANDERSON, 13 Ash St., Danvers, Mass.	1919
LORD, THOMAS HENRY, Newington, N. H.	1916
LORING, J. ALDEN, Owego, N. Y.	1917
LOW, ETHELBERT I., 120 Broadway, New York, N. Y.	1907
LUCE, Mrs. FRANCIS P., Box 216, Vineyard Haven, Mass.	1912
LUM, EDWARD H., Chatham, N. J.	1904
LUNN, Miss MARGARET A., 1724 T St., N. W., Washington, D. C.	1919
MABBOTT, B. W., R. D. 2, Unity, Wis.	1919
MACKINTOSH, RICHARDS B., 5 Howard Ave., Peabody, Mass.	1919
MACLAY, MARK W., Jr., 106 E. 85th St., New York, N. Y.	1905
MACREYNOLDS, GEORGE, 76 E. State St., Doylestown, Pa.	1917
MADDOCK, Miss EMELINE, Monte Vista, Philadelphia, Pa.	1897
MADISON, HAROLD LESTER, Park Museum, Providence, R. I.	1912
MAGEE, M. J., 603 South St., Sault Ste. Marie, Mich.	1919
MAHER, J. E., 351 Communipaw Ave., Jersey City, N. J.	1902
MAIN, FRANK H., 227 N. 18th St., Philadelphia, Pa.	1913
MAPLES, JAMES C., Port Chester, N. Y.	1913
MARBLE, RICHARD M., Woodstock, Vt.	1907

MARCKRES, GEO. M., Sharon, Conn.....	1918
MARKS, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.....	1915
MARRS, MRS. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.....	1903
MARSHALL, ALFRED, 17 S. Jefferson St., Chicago, Ill.....	1916
*MARSHALL, MRS. ELLA M. O., New Salem, Mass.....	1912
MARTENET, MARK S., 4001 Bonner R'd, Forest P'k, Baltimore, Md.....	1919
MATHEWS, F. SCHUYLER, 17 Frost St., Cambridge, Mass.....	1917
MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.....	1912
MATTERN, WALTER I., 1042 Walnut St., Allentown, Pa.....	1916
MAYFIELD, DR. GEORGE R., Kissam Hall, Nashville, Tenn.....	1917
MCCCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburg, Pa.....	1900
MCCLOSKEY, Miss KATE A., Sup't. Nat. Study in Schools, Saratoga Springs, N. Y.....	1919
MCCONNELL, THOMAS L., 1813 Huey St., McKeesport, Pa.....	1915
MCCOOK, PHILIP J., 15 William St., New York, N. Y.....	1895
MCGEEVER, MYLES STANDISH, 60 Keene St., Lowell, Mass.....	1918
MCGRAW, HARRY A., 1805 15th Ave., Altoona, Pa.....	1917
MCGREW, ALBERT D., 5611 Stanton Ave., Pittsburg, Pa.....	1917
MCHATTON, T. H., 163 Mell St., Athens, Ga.....	1917
MCILHENNY, EDWARD AVERY, Avery Island, La.....	1894
MCINTIRE, MRS. HERBERT BRUCE, 4 Garden St., Cambridge, Mass.....	1908
MCLAIN, ROBERT BAIRD, Market and 12th St., Wheeling, W. Va....	1893
MCLEAN, HON. GEO. P., 1520 New Hampshire Ave., Washington, D. C.....	1913
McMILLAN, MRS. GILBERT N., Gorham, N. H.....	1902
MCNEIL, DR. CHAS. A., Sedalia, Mo.....	1919
MEAD, MRS. E. M., 303 W. 84th St., New York, N. Y.....	1904
MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.....	1912
MEDSGER, OLIVER P., 9 Columbia Ave., Arlington, N. J.....	1919
MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.....	1913
MENNINGER, WM. C., 709 W. 169th St., New York, N. Y.....	1919
MERRIAM, HENRY F., 37 Clinton Ave., Maplewood, N. J.....	1905
MERRILL, ALBERT R., Hamilton, Mass.....	1912
MERRILL, B. G., Hinsdale, Ill.....	1917
MERRILL, D. E., c.o. Curtis Pub. Co., Long Beach, Calif.....	1913
MERRILL, HARRY, 316 State St., Bangor, Maine.....	1883
*MERSHON, W. B., Saginaw, Mich.....	1905
METCALF, F. P., Biological Survey, Washington, D. C.....	1917
METCALF, Z. P., N. C. State College, West Raleigh, N. C.....	1913
MEYER, Major G. RALPH, 126 South, Ft. Monroe, Va.....	1913
MEYER, Miss HELOISE, Lenox, Mass.....	1913
MICHAELS, WM. C., 645 W. 56th St., Kansas City, Mo.....	1919
MILLER, Miss BERTHA STUART, 48 Reid Ave., Port Washington, N. Y.....	1915
MILLER, Miss CARRIE ELLA, 36 Cottage St., Lewiston, Me.....	1918

* Life Associate.

MILLER, CHAS. W., Jaffna College, Jaffna, Ceylon.....	1909
MILLER, Mrs. ELISABETH C. T., 1010 Euclid Ave., Cleveland, O.....	1916
MILLER, Dr. LOYE HOLMES, Southern Branch Univ. of Calif., Los Angeles, Calif.....	1918
MILLS, ENOS A., Estes Park, Colo.....	1916
MINER, LEO D., 1836 Vernon St., N. W., Washington, D. C.....	1913
MITCHELL, CATHERINE ADAMS, Riverside, Ill.....	1911
MITCHELL, HORACE HEADLEY, Provincial Mus. Regina, Sask.....	1918
MITCHELL, MASON, U. S. Consul, Apia, Samoa.....	1916
MITCHELL, Dr. WALTON I., 3210 E. 1st St., Wichita, Kan.....	1893
MOODY, A. J., c/o. Aetna Life Ins. Co., Hartford, Conn.....	1918
MOODY, Dr. WM. LADD, Newport, R. I.....	1918
MOORE, ELIZABETH PUTNAM, North Anson, Me.....	1905
MORCOM, G. FREAN, 2906 Pine Ave., Berkeley, Calif.	1886
MORGAN, BRENT M., 224 11th St., S. W., Washington, D. C.....	1919
MORLEY, S. GRISWOLD, 2535 Etna St., Berkeley, Calif.	1911
MORLOCK, LOUIS F., Creve Couer, Mo.....	1919
MORRISON, ALVA, Brier Neck, Gloucester, Mass.....	1915
MORSE, GEO. F., Jr., Grove Hall, Mass.....	1919
MORSE, HARRY GILMAN, Huron, Ohio.....	1912
MORSE, Miss MARGARETTE E., 3513 Bloomington Ave., Minneapolis, Minn.....	1919
MORSS, CHAS. B., 35 Greenleaf St., Bradford, Mass.....	1918
MOSELEY, Prof. EDWIN LINCOLN, Bowling Green, Ohio.....	1918
MOSES, Mrs. EDMUND QUINCEY, 303 W. 84th St., New York, N. Y.	1919
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass.....	1905
MOUSLEY, WM. HENRY, Hatley, Quebec, Canada.....	1915
MULLEN, JAMES L., 614 E. 6th South, Salt Lake City, Utah.....	1919
MUNRO, J. A., Okanagan Landing, British Columbia.....	1913
MURIE, O. J., 219 7th Ave., S, Moorhead, Minn.....	1913
MURPHY, Dr. EUGENE EDMUND, 432 Telfair St., Augusta, Ga.....	1919
MURPHY, Mrs. GRACE E. B., 272 Hicks St., Brooklyn, N. Y.....	1919
MURRAY, EDGAR H., 439 Guoin St., Detroit, Mich.....	1919
MYERS, Mrs. HARRIET W., 311 N. Ave. 66, Los Angeles, Calif.....	1906
MYERS, Miss LUCY F., 127 Academy St., Poughkeepsie, N. Y.....	1898
NAUMAN, E. D., Box 606, Sigourney, Iowa.....	1918
NEELY, JAMES C., 135 High St., Brookline, Mass.....	1919
NEFF, JOHNSON, Marionville, Mo.....	1919
NICHOLS, L. NELSON, N. Y. Public Library, New York, N. Y.....	1917
NICHOLS, RODMAN A., 33 Warren St., Salem, Mass.....	1919
NIMS, Mrs. LUCIUS, 17 Union St., Greenfield, Mass.....	1913
NOBLE, ELEANOR G., 66 Sparks St., Cambridge, Mass.....	1916
NOBLE, G. KINGSLEY, Am. Mus. Nat. Hist., New York, N. Y.....	1916
NOKES, Dr. I. D., 134 W. 55th St., Los Angeles, Calif.....	1915
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, EDWARD, 301 W. Springfield Ave., Philadelphia, Pa.....	1916

NORRIS, J. PARKER, Jr., 2122 Pine St., Philadelphia, Pa.....	1904
NORTON, MRS. CARRIE MORSE, Faulkton, S. Dak.....	1918
ODGEN, DR. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
OLDYS, HENRY, Silver Springs, Md.....	1896
O'ROARK, MRS. L. S., 29 Rutherford Ave., Rutherford, N. J.....	1919
OLIVER, MRS. EDITH HOLLICK, 48 St. Nicholas Pl., New York, N. Y.....	1918
OSBORN, Prof. HENRY FAIRFIELD, Am. Mus. Nat. Hist., New York, N. Y.....	1919
OSBORNE, ARTHUR A., 58 Washington St., Peabody, Mass.....	1912
OSGOODE, HARRY W., 16 Elm St., Pittsfield, N. H.....	1918
OTTEMILLER, FREE, 752 S. George St., York, Pa.....	1914
OVERTON, DR. FRANK, Patchogue, N. Y.....	1909
*OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PACKARD, WINTHROP, 1442 Washington St., Canton, Mass.....	1917
PAINE, AUGUSTUS G., Jr., 31 E. 69th St., New York, N. Y.....	1886
PAINE, CHARLES JACKSON, 705 Sears Bldg., Boston, Mass.....	1917
*PALMER, Miss ELIZABETH DAY, 1741 S. Harvard Blv'd, Los Angeles, Calif.....	1918
PALMER, R. H., 222 Dietrich Blk., Pocatello, Ida.....	1917
PALMER, DR. SAMUEL C., 712 Ogden Ave., Swarthmore, Pa.....	1899
PALMER, MRS. T. S., 1939 Biltmore St., N. W., Washington, D. C.....	1918
PANGBURN, CLIFFORD H., 731 Elm St., New Haven, Conn.....	1907
*PARKER, EDWARD LUDLOW, Nashawtue Rd., Concord, Mass.....	1916
PARKS, MRS. F. R., 128 Crafts Rd., Chesnut Hill, Mass.....	1918
PAUL, LUCIUS H., 1485 North St., Rochester, N. Y.....	1908
PAXTON, MRS. REGINA A., "The Cairo," Que St., Washington, D. C.....	1917
PEABODY, Rev. P. B., Blue Rapids, Kan.....	1903
PELLEW, Miss MARION J., 1637 Massachusetts Ave., N. W., Wash- ington, D. C.....	1919
PEMBERTON, JOHN ROY, 729 Kennedy Bldg., Tulsa, Okla.....	1918
PENNELL, Miss ELIZABETH A. S., 252 Maine St., Brunswick, Me.....	1918
PENNINGTON, WM. DANA, 1722 4th St., Washington, D. C.....	1919
PENNOCK, CHAS J., Kennett Sq., Pa.....	1919
*PENROSE, DR. CHAS. BINGHAM, 1720 Spruce St., Philadelphia, Pa.....	1919
PEPPER, DR. WM., 1811 Spruce St., Philadelphia, Pa.....	1911
PERINE, KEBLE, 26 Trull St., Boston, Mass.....	1917
PERKINS, DR. ANNE E., Gowanda Hospital, Collins, N. Y.....	1917
PERKINS, ARTHUR W., 21 High St., Farmington, Me.....	1915
PERKINS, DR. GEORGE H., Univ. of Vt., Burlington, Vt.....	1912
PERRY, DR. HENRY JOSEPH, 45 Bay State Road, Boston, Mass.....	1909
PETERS, ALBERT S., Lake Wilson, Minn.....	1908
PETTY, ORVILLE A., Chapel St. & Sherman Ave., New Haven, Conn.....	1919
PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.....	1912

* Life Associate.

PHELPS, Mrs. J. W., Box 36, Northfield, Mass.	1899
PHILIPP, PHILIP B., 220 Broadway, New York, N. Y.	1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.	1891
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.	1912
PHILLIPS, CHAS. P., Univ. Minn., Minneapolis, Minn.	1919
PIERCE, WRIGHT McEWEN, Box 343, Claremont, Calif.	1918
PILSBURY, FRANK O., 1088 Main St., Walpole, Mass.	1917
PINCHOT, GIFFORD, Real Estate Trust Bldg., Philadelphia, Pa.	1910
PINKUS, ALBERT S., 10 Fairfield Ave., Hartford, Conn.	1919
PIRNIE, MILES D., 428 N. Tioga St., Ithaca, N. Y.	1919
PLATT, Hon. EDMUND, Poughkeepsie, N. Y.	1917
POE, Miss MARGARETTA, 1204 N. Charles St., Baltimore, Md.	1899
POOLE, EARL L., School Admin. Bldg., Reading, Pa.	1916
POPE, ALEXANDER, 1013 Beacon St., Brookline, Mass.	1919
PORTER, LOUIS H., Stamford, Conn.	1893
POST, WILLIAM S., Bernardsville, N. J.	1911
POTTER, JULIAN K., 563 Bailey St., Camden, N. J.	1912
POTTER, LAWRENCE B., Eastend, Sask.	1919
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.	1892
PRATT, Hon. GEO. D., Telephone Bldg., Albany, N. Y.	1917
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.	1906
PRICE, LIGON, R. F. D. 1, Dunmore, W. Va.	1913
PRITCHARD, Mrs. F. A., 203 N. Court St., Medina, Ohio.	1918
PROCTOR, GEORGE N., 35 Congress St., Boston, Mass.	1919
PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.	1893
QUARLES, EMMET AUGUSTUS, Southfield Point, Stamford, Conn.	1918
QUIGGLE, JAMES C., McElhattan, Pa.	1915
RAKER, Miss MARY E., 1484 E. Sherman St., Portland, Ore.	1918
RATLIFF, Hon. WALTER S., R. R. B., Box 276, Richmond, Ind.	1918
RAVEN, HENRY CUSHIER, Bayshore, N. Y.	1918
REA, PAUL M., Charleston Museum, Charleston, S. C.	1912
REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.	1896
REGAR, H. SEVERN, 1400 De Kalb St., Norristown, Pa.	1916
REED, Miss CLARA EVERETT, Brookfield, Mass.	1919
REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.	1901
REICHENBERGER, Mrs. VICTOR M., Hotel Essex, New York, N. Y.	1916
REID, Mrs. BRUCE, Gulf Refinery, Port Arthur, Tex.	1918
REID, RUSSELL, 722 5th St., Bismarek, N. Dak.	1919
RETT, EGMONT Z., 3902 Pecos St., Denver, Colo.	1917
RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.	1895
RICE, JAMES HENRY, Brick House Plantation, Wiggins, S. C.	1910
RICE, WARD J., Roachdale, Ind.	1913
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass.	1900
RICHARDSON, W. D., 4215 Prairie Ave., Chicago, Ill.	1917
RIDGWAY, JOHN L., Geological Survey, Washington, D. C.	1890
RIKER, CLARENCE B., 43 Scotland Road, South Orange, N. J.	1885

ROBBINS, CHARLES A., Onset, Mass.	1914
ROBBINS, ROYAL E., 104 Pleasant St., Brookline, Mass.	1917
ROBERTS, PREWITT, Conway, Mo.	1919
ROBERTS, WILLIAM ELY, 207 McKinley Ave., Lansdowne, Pa.	1902
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Calif.	1911
ROBINSON, ANTHONY W., Haverford, Pa.	1903
ROBINSON, MRS. L. K., 1130 S. Franklin St., Denver, Colo.	1919
ROBINSON, Miss MARY L., Lathrop Trade School, Kansas City, Mo.	1919
RODOLPHE, Brother, Christian Bro. Normal School, Laval Rapids, Que.	1919
*ROGERS, CHAS H., Am. Mus. Nat. Hist., New York, N. Y.	1904
ROLAND, CONRAD K., 1208 DeKalb St., Norristown, Pa.	1917
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.	1896
ROSS, GEO. H., 23 West St., Rutland, Vt.	1904
ROSS, Dr. LUCRETIOUS H., 507 Main St., Bennington, Vt.	1912
ROUSH, GEO. HAROLD, 343 Prospect St., Morgantown, W. Va.	1919
ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Calif.	1889
RUGG, HAROLD GODDARD, Dartmouth College, Hanover, N. H.	1919
RUST, HENRY J., Coeur d'Alene, Idaho.	1918
RYDER, Mrs. ROBERT O., 1041 Franklin Ave., Columbus, Ohio.	1919
SACKETT, CLARENCE, Rye, N. Y.	1910
SAGE, HENRY M., Menands Road, Albany, N. Y.	1885
SAGE, Mrs. MARY SEARL, 1974 Broadway, New York, N. Y.	1919
SALYER, J. CLARK, 2412 Main St., Lexington, Mo.	1919
SAMPSON, Miss MYRA M., 30 Green St., Northampton, Mass.	1918
SANBORN, COLIN C., P. O. Box 97, Rutherford, N. J.	1911
*SANFORD, Dr. LEONARD C., 216 Crown St., New Haven, Conn.	1919
SANTENS, REMI H., Carnegie Mus., Pittsburgh, Pa.	1918
SAUNDERS, ARETAS A., 21 Edlie Ave., South Norwalk, Conn.	1907
SAVAGE, MAHLON L., 1338 Orthodox St., Frankford, Philadelphia, Pa.	1919
SCHAEFER, OSCAR FREDERICK, 669 Genesee St., Rochester, N. Y.	1916
SCHAFER, J. J., Port Bryon, Ill.	1918
SCHANTZ, ORPHEUS M., 10 S. LaSalle St., Chicago, Ill.	1919
SCHENCK, FREDERIC, Lenox, Mass.	1912
SCHLEICHERT, ERNEST K., Mathias Point, Va.	1919
SCHONNEGEL, JULIAN ELIOT, 92 Morningside Ave., New York, N. Y.	1918
SCHORGER, A. W., 2021 Kendall Ave., Madison, Wis.	1913
SCHRENCK, Dr. HERMANN VON, 4139 McPherson Ave., St. Louis, Mo.	1919
SCOVILLE, SAMUEL, Jr., 415 Lancaster Ave., Haverford, Pa.	1916
SCUDDER, BRADFORD A., 146 W. 105th St., New York, N. Y.	1917
SEARS, WILLIAM R., 73 Tremont St., Boston, Mass.	1916
SERRILL, WILLIAM J., Haverford, Pa.	1916
SEWELL, JAMES W., Jr., 2218 Patterson St., Nashville, Tenn.	1918

* Life Associate.

SHAW, HENRY S., 78 Cypress St., Newton Center, Mass.....	1916
SHAW, DR. J. E. NORTON, Mattapoisett, Mass.....	1919
SHAW, WILLIAM T., 1000 Thatuna St., Pullman, Wash.....	1908
SHEA, DANIEL W., Catholic Univ. of Amer., Washington, D. C.....	1917
SHEARER, DR. AMON R., Mont Belvieu, Tex.....	1905
SHELDON, CHARLES, 3102 Q St., N. W., Washington, D. C.....	1911
SHELLEY, F. L., Elmdale, Kan.....	1918
SHELTON, ALFRED C., c/o. Johnson, Shelton Co., Dayton, Ohio.....	1911
SHERWOOD, MRS. THEODORE C., 3520 Cherry St., Kansas City, Mo..	1919
SHIRLEY, LESTER L., 604 S. 10th St., Vincennes, Ind.....	1917
SHIRLING, ALBERT E., 3849 E. 62nd St., Kansas City, Mo.....	1919
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.....	1910
SHOEMAKER, HENRY W., McElhattan, Pa.....	1912
SHOFFNER, CHARLES P., 2011 Wallace St., Philadelphia, Pa.....	1915
SHROSBEE, GEO., Pub. Mus., Milwaukee, Wis.....	1899
SILLIMAN, O. P., Cor. Alisal & Riker St., Salinas, Calif.....	1915
SILVER, JOHN A., Aberdeen, Md.....	1918
SIMMONS, GEO. FINLAY, Univ. Texas, Austin, Texas.....	1910
SIMONDS, Miss SUSIE L., Hartland, Wis.....	1919
SKINNER, M. P., Yellowstone Park, Wyo.....	1916
SMITH, AUSTIN PAUL, 2043 E. 71st St., Cleveland, Ohio.....	1911
SMITH, Rev. FRANCIS CURTIS, 22 Jewett Pl., Utica, N. Y.....	1903
SMITH, Prof. FRANK, 1005 West California Ave., Urbana, Ill.....	1909
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....	1888
SMITH, Dr. HUGH M., 1209 M St., N. W., Washington, D. C.....	1886
SMITH, LESTER W., 60 Cottage St., Meriden, Conn.....	1916
SMITH, NAPIER, 46 Côtés des Neiges Road, Montreal, Canada.....	1915
SMITH, Mrs. WALLIS C., 525 N. Michigan Ave., Saginaw, W. S., Mich.	1916
SMITH, WENDELL PHILLIPS, Wells River, Vt.....	1919
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va.....	1892
SNYDER, ELIAS LeROY, 1244 N. Emporia Ave., Wichita, Kan.....	1919
SNYDER, LESTER L., Royal Ont. Mus., Toronto, Ont.....	1919
SNYDER, WILL EDWIN, 309 DeClark St., Beaver Dam, Wis.....	1895
SOPER, JOSEPH DEWEY, R. D. 2, Preston, Ont., Canada.....	1918
SOULE, CAROLINE GRAY, 187 Walnut St., Brookline, Mass.....	1917
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....	1911
SPENCER, Miss CLEMENTINA S., Dept. of Zoölogy, Coe College, Cedar Rapids, Iowa.....	1917
STANWOOD, Miss CORDELIA JOHNSON, Ellsworth, Me.....	1909
STAPLETON, RICHARD, 219 High St., Holyoke, Mass.....	1916
STEELE, HENRY B., 4530 Drexel Boulevard, Chicago, Ill.....	1917
STEPHENS, Prof. T. C., Morningside College, Sioux City, Iowa.....	1909
STEPHENSON, Mrs. JESSE, Monte Vista, Colo.....	1918
STEVENS, Prof. G. W., Normal College, Warrensburg, Mo.....	1919
STEVENS, Dr. J. F., Box 1546, Lincoln, Neb.....	1908
STEWART, Mrs. CECIL, 451 Beacon St., Boston, Mass.....	1917

STILES, EDGAR C., 345 Main St., West Haven, Conn.....	1907
STIMSON, DR. ARTHUR M., 414 Raymond St., Chevy Chase, Md.....	1917
STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill....	1912
STONE, HARRY HERBERT, JR., Sturbridge, Mass.....	1919
STORER, TRACY IRWIN, Mus. Vert. Zoology, Berkeley, Calif.....	1916
STREET, J. FLETCHER, Beverly, N. J.....	1908
STRUTHERS, REV. ALFRED L., Townsend, Mass.....	1918
STUART, FRANK A., 118 Green St., Marshall, Mich.....	1915
STUART, GEO. H., 3rd, c-o Girard Trust Co., Philadelphia, Pa.....	1913
STURGIS, S. WARREN, Groton, Mass.....	1910
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
SUGDEN, ARTHUR W., 35 Concord St., Hartford, Conn.....	1913
SUTTON, GEO. MIKSC, Carnegie Mus., Pittsburgh, Pa.....	1919
SWAIN, JOHN MERTON 113 Main St., Farmington, Me.....	1899
SWEENEY, J. A., Forest Service, Nenzel, Neb.....	1916
SWEET, MISS ORA D., 34 Elizabeth St., Auburn, N. Y.....	1919
SWENK, MYRON H., 1410 N. 37th St., Lincoln, Neb.....	1904
TATNALL, SAMUEL A., 503 Hansberry St., Philadelphia, Pa.....	1916
TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.....	1907
TAYLOR, HORACE, 3 Netherlands Rd., Brookline, Mass.....	1917
TAYLOR, LIONEL E., Bankhead, Kelowna, B. C.....	1913
TAYLOR, DR. WALTER P., 1428 Perry Place, N. W., Washington, D. C.	1916
TAYLOR, WARNER, 219 Clifford Court, Madison, Wis.....	1916
TEACHENOR, DIX, 3237 Garfield Ave., Kansas City, Mo.....	1919
TERRILL, LEWIS MCL, 44 Stanley Ave., St. Lambert, Quebec.....	1907
THOMAS, MISS EMILY HINDS, Bryn Mawr, Pa.....	1901
THOMAS, GERALD B., 229 Burlington Ave., Billings, Mont.....	1919
THOMPSON, J. WALCOTT, 527 East First South St., Salt Lake City, Utah.....	1916
THORNS, MISS JULIA A., c/o Dr. D. H. Hill, Raleigh, N. C.....	1916
THOWLESS, HERBERT L., 765 Broad St., Newark, N. J.....	1919
TILTON, MISS MABEL THURSTON, Vineyard Haven, Mass.....	1918
TINDALL, CHAS. W., 912 N. Noland St., Independence, Mo.....	1919
TINKER, ALMERIN D., 1019 Church St., Ann Arbor, Mich.....	1907
TOWER, MRS. KATE D., Hotel Bristol, Copley Sq., Boston, Mass.....	1908
TOWNE, MISS ANNIE FLORENCE, Topsfield, Mass.....	1918
TOWNE, DR. SOLON RODNEY, Sta. D., Route 2, Omaha, Neb.....	1919
TOWNSHEND, HENRY HOTCHKISS, 35 Hellbourne Ave., New Haven, Conn.....	1915
TREAT, WILLARD ELLERY, Silver Lane, Conn.....	1919
TREGANZA, A. O., 522 S. 13th St., E., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TRUESDELL, JOHN F., 230 Post Office Bldg., Denver, Colo.....	1918
TRULL, HARRY S., 317 East 196th St., New York, N. Y.....	1917
TRUMBELL, J. H., Plainville, Conn.....	1907
TUDBURY, WARREN C., 1939 Marin Ave., Berkeley, Calif.....	1903

TUFTS, ROBIE W., Wolfville, Nova Scotia.....	1919
TULLOCK, MRS. GILBERT, 379 Edgewood Ave., New Haven, Conn....	1919
TUTTLE, HENRY EMERSON, Lake Forest, Ill.....	1909
TWITCHELL, A. H., Flat, Alaska.....	1918
TYLER, JOHN G., Turlock, Calif.....	1912
UFFORD, DR. EUGENE U., 221 Central St., Auburndale, Mass.....	1918
UNDERWOOD, WM. LYMAN, Mass. Inst. of Tech., Cambridge, Mass....	1900
VALENTINE, MISS ANNA J., Bellefonte, Pa.....	1905
VALLANDINGHAM, MISS KATIE, 811 Highland Ave., Carrollton, Ky....	1918
*VANDERGRIFF, S. H., 311 Riggs Bldg., Washington, D. C.....	1918
VAN FLEET, CLARK C., 446 10th St., Santa Rosa, Calif.....	1919
VAN NAME, WILLARD G., Am. Mus. Nat. Hist., New York, N. Y....	1900
VAN NEMAN, MISS LOULA, Westport High School, Kansas City, Mo....	1919
VETTER, DR. CHARLES, 67 West 12th St., New York, N. Y.....	1898
VIERECK, HENRY L., Biological Survey, Washington, D. C.....	1916
VORHIES, DR. CHAS T., Univ. of Ariz., Tuscon, Ariz.....	1918
WADSWORTH, CLARENCE S., 27 Washington St., Middletown, Conn....	1906
WALKER, EGBERT HAMILTON, 411 Camden Court, Ann Arbor, Mich....	1919
WALKER, ERNEST P., Phoenix, Ariz.....	1918
WALKER, GEO. R., R. D. 3, Murray, Utah.....	1909
WALLACE, CHAS. R., 69 Columbus Ave., Delaware, Ohio.....	1913
WALLACE, JAMES S., 12 Wellington St., E., Toronto, Ontario.....	1907
WALTER, DR. HERBERT E., 67 Oriole Ave., Providence, R. I.....	1901
WALTERS, FRANK, 125 23rd St., Elmhurst, N. Y.....	1902
WARD, FRANK H., 18 Grove Place, Rochester, N. Y.....	1908
WARD, HENRY L., 520 Lake Drive, Milwaukee, Wis.....	1906
WARNER, EDWARD P., Langley Field, Hampton, Va.....	1910
WATSON, C. G., 201 Ridout St., S., London, Ont.....	1919
WEBER, J. A., Moore and Grand Aves., Leonia, N. J.....	1906
WEBSTER, DR. GEORGE A., Roxbury, Mass.....	1916
WEBSTER, MRS. JENNIE E. B., 44 E. 23rd St., New York, N. Y.....	1917
WEEKS, REV. LEROY TITUS, Emmetsburg, Iowa.....	1917
WEISEMAN, T. WALTER, 226 Beaver Road, Emsworth, Pa.....	1919
WEISER, CHARLES S., 105 W. Springettsbury Ave., York, Pa.....	1916
*WELLMAN, GORDON B., 46 Dover R'd., Wellesley, Mass.....	1908
WEST, CHAS. SLADE, Marianna, Fla.....	1919
WETMORE, MRS. EDMUND H., Babylon, N. Y.....	1902
WEYGANDT, DR. CORNELIUS, 6635 Wissahickon Ave., Philadelphia, Pa....	1907
*WHARTON, WILLIAM P., Groton, Mass.....	1907
WHEELER, REV. HARRY EDGAR, Fayetteville, Ark.....	1919
WHEELER, JOSEPH RANDALL, Grand Lake, Newfoundland.....	1919
WHITAKER, J. R., Grand Lake, Newfoundland.....	1919
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.....	1891

* Life Associate.

WHITE, GEORGE R., Dead Letter Office, Ottawa, Canada.....	1903
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.....	1902
WHITING, ADRIAN P., 163 Sandwich St., Plymouth, Mass.....	1919
WHITMAN, F. N., McGraw Hall, Ithaca, N. Y.....	1919
WHITTLE, CHARLES L., 50 Congress St., Boston, Mass.....	1916
WHITTLE, Mrs. H. G., Peterboro, N. H.....	
WIEGMANN, Dr. WILLIAM HENRY, 436 E. 5th St., New York, N. Y.....	1916
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, T. FERDINAND, 118 E. 54th St., New York, N. Y.....	1895
WILEY, Miss LENA CATHERINE, Buckland, Mass.....	1918
WILLARD, BERTEL G., 1619 Massachusetts Ave., Cambridge, Mass...	1906
WILLARD, FRANK C., Farmingdale, N. Y.....	1909
WILLARD, OSCAR T., 1444 E. 54th St., Chicago, Ill.....	1919
WILLCOX, Prof. M. A., 63 Oakwood Road, Newtonville, Mass.....	1913
WILLIAMS, Miss BELLE, Colonia Hotel, Columbia, S. C.....	1915
WILLIAMS, ENRIQUE RUIZ, Reporto Almendarez, Marianao, Cuba...	1918
WILLIAMS, LAIDLAW, 152 W. 57th St., New York, N. Y.....	1919
WILLIAMS, ROBERT S., N. Y. Botanical Gardens, New York, N. Y...	1888
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILLIS, Miss CLARA L., 72 Main St., Framingham Center, Mass...	1915
WILMOT, NELSON E., Marshall St., West Haven, Conn.....	1916
WILSON, Mrs. ETTA S., 2 Clarendon Ave., Detroit, Mich.....	1917
WILSON, GORDON, 1424 Chestnut St., Bowling Green, Ky.....	1919
WING, DEWITT C., 5344 Dorchester Ave., Chicago, Ill.....	1913
WINGARD, TODD ALBERT, 1929 Park Rd., Washington, D. C.....	1918
WISE, Miss HELEN D., 1930 18th St., N. W., Washington, D. C....	1919
*WOOD, Dr. CASEY A., 7 W. Madison St., Chicago, Ill.....	1917
WOOD, GEORGE B., 1830 Spruce St., Philadelphia, Pa.....	1916
WOOD, NELSON R., Smithsonian Institution, Washington, D. C....	1895
WOODRUFF, FRANK M., Acad. of Sciences, Lincoln Park, Chicago, Ill.	1894
WOODRUFF, LEWIS B., 14 E. 68th St., New York, N. Y.....	1886
WOODWARD, FRANK ERNEST, 48 Abbott Rd., Wellesley Hills, Mass...	1919
WOODWARD, Dr. LEMUEL, 52 Pearl St., Worcester, Mass.....	1917
WOODWORTH, ROY C., 204 E. 35th St., Kansas City, Mo.....	1908
WORCESTER, Mrs. ALFRED J., 314 Bacon St., Waltham, Mass.....	1908
WRIGHT, FRANK S., 14 Cayuga St., Auburn, N. Y.....	1917
WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Sag'naw, W. S., Mich.	1907
WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....	1902
WYMAN, LUTHER E., 3927 Wisconsin St., Los Angeles, Calif.....	1907
YOUNG, Rev. CHAS. JOHN, Brighton, Ont., Canada.....	1918
YOUNG, JOHN P., 1730 Massachusetts Ave., Washington, D. C.....	1911
ZIMMER, J. T., Dept. of Agriculture, Port Moresby, British Papua...	1908
ZUCKERMAN, JOSEPH, Am. Mus. Nat. Hist., New York, N. Y.....	1919

* Life Associate.

DECEASED MEMBERS.

FELLOWS

ALDRICH, CHARLES.....	March 8, 1908
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BEAL, FOSTER ELLENBOROUGH LASCELLES.....	Oct. 1, 1916
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
BREWSTER, WILLIAM*.....	July 11, 1919
COOKE, WELLS WOODBRIDGE.....	March 30, 1916
COUES, ELLIOT*.....	Dec. 25, 1899
ELLIOT, DANIEL GIRAUD*.....	Dec. 22, 1915
GOSS, NATHANIEL STICKNEY.....	March 10, 1891
HOLDER, JOSEPH BASSETT.....	Feb. 28, 1888
JEFFRIES, JOHN ARMORY.....	March 26, 1892
McILWRAITH, THOMAS.....	Jan. 31, 1903
MEARNS, EDGAR ALEXANDER.....	Nov. 1, 1916
MERRILL, JAMES CUSHING.....	Oct. 27, 1902
PURDIE, HENRY AUGUSTUS.....	March 29, 1911
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN MAYNARD.....	Jan. 28, 1887

RETIRED FELLOWS

BELDING, LYMAN.....	Nov. 22, 1917
GILL, THEODORE NICHOLAS.....	Sept. 25, 1914

HONORARY FELLOWS

BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BARBOZA DU BOCAGE, JOSÉ VICENTE.....	July —, 1908
BERLEPSCH, HANS VON.....	Feb. 27, 1915
BURMEISTER, KARL HERMANN KONRAD.....	May 1, 1891
CABANIS, JEAN LOUIS.....	Feb. 20, 1906
DRESSER, HENRY EELES.....	Nov. 28, 1915
FINSCH, FRIEDRICH HERMANN OTTO.....	Jan. 31, 1917
GÄTKE, HEINRICH.....	Jan. 1, 1897
GIGLIOLI, ENRICO HILLYER.....	Dec. 16, 1909
GODMAN, FREDERICK DUCANE.....	Feb. 19, 1919

* Presidents of A. O. U.

GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, [KARL JOHANN] GUSTAV.....	Nov. 20, 1900
HARVIE-BROWN, JOHN ALEXANDER.....	July 26, 1916
HUME, ALLAN OCTAVIAN.....	July 31, 1912
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MEYER, ADOLF BERNHARD.....	Feb. 5, 1911
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SCLATER, PHILIP LUTEY.....	June 27, 1913
SEEBOHM, HENRY.....	Nov. 26, 1895
SHARPE, RICHARD BOWDLER.....	Dec. 25, 1909
TACZANOWSKI, LADISLAS [CASIMIROVICH].....	Jan. 17, 1890
WALLACE, ALFRED RUSSELL.....	Nov. 7, 1913

CORRESPONDING FELLOWS.

ALTUM, JOHANN BERNARD THEODOR.....	Feb. 1, 1900
ANDERSON, JOHN.....	Aug. 15, 1900
BALDAMUS, AUGUSTE KARL EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS WRIGHT.....	Oct. 15, 1891
BLASIUS, [PAUL HEINRICH] RUDOLPH.....	Sept. 21, 1907
BLASIUS, WILHELM AUGUST HEINRICH.....	May 31, 1912
BOGDANOW, MODEST NIKOLAEVICH.....	March 16, 1888
BROOKS, WILLIAM EDWIN.....	Jan. 18, 1899
BRYANT, WALTER [PIERC] E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
BUTLER, EDWARD ARTHUR.....	April 16, 1916
COLLETT, ROBERT.....	Jan. 27, 1913
COOPER, JAMES GRAHAM.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
DUGÈS, ALFRED.....	Jan. 7, 1910
FATIO, VICTOR.....	March 19, 1906
GIRTANNER, GEORG ALBERT.....	June 4, 1907
GOELDI, EMIL AUGUST.....	July 5, 1917
HAAST, JOHANN FRANZ JULIUS VON.....	Aug. 16, 1887
HARGITT, EDWARD.....	March 19, 1895

HAYEK, GUSTAV EDLER VON.....	Jan. 9, 1911
HERMAN, OTTO.....	Dec. 27, 1914
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, EUGEN FERDINAND VON.....	May 31, 1889
KNUDSEN, VALDEMAR.....	Jan. 8, 1898
KRUKENBERG, CARL FRIEDRICH WILHELM.....	Feb. 18, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEGGE, WILLIAM VINCENT.....	March 25, 1918
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LILFORD, LORD (THOMAS LYTTLETON POWYS).....	June 17, 1896
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MARSCHALL, AUGUST FRIEDRICH.....	Oct. 11, 1887
MIDDENDORFF, ALEXANDER THEODOROVICH.....	Jan. 28, 1894
MOSJISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST.....	Aug. 27, 1897
NAMIYE, MOTOYOSHI.....	May 24, 1918
NORTH, ALFRED JOHN.....	May 6, 1917
OATES, EUGENE WILLIAM.....	Nov. 16, 1911
OUSTALET, [JEAN FRÉDÉRIC] ÉMILE.....	Oct. 23, 1905
PHILIPPI, RUDOLF AMANDUS.....	July 23, 1904
PRJEVALSKY, NICOLAS MICHAELOVICH.....	Nov. 1, 1888
PRENTISS, DANIEL WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND RICHARD VON.....	March 15, 1903
RAMSAY, EDWARD PIERSON.....	Dec. 16, 1916
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAS ALEKSYEVICH.....	Feb. 8, 1885
SHELLEY, GEORGE ERNEST.....	Nov. 29, 1910
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, HENRY BAKER.....	March 8, 1906
WHARTON, HENRY THORNTON.....	Sept. —, 1895
WOODHOUSE, SAMUEL WASHINGTON.....	Oct. 23, 1904

MEMBERS

BAGG, EGBERT.....	July 12, 1915
BROWN, HERBERT.....	May 12, 1913
CAMERON, EWEN SOMERLED.....	May 25, 1915
FANNIN, JOHN.....	June 20, 1904
HARDY, MANLY.....	Dec. 9, 1910
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
KNIGHT, ORA WILLIS.....	Nov. 11, 1913
MILLER, OLIVE THORNE (MRS. HARRIET MANN MILLER)...	Dec. 25, 1918
RALPH, WILLIAM LEGRANGE.....	July 8, 1907
TORREY, BRADFORD.....	Oct. 7, 1912
WHITMAN, CHARLES OTIS.....	Dec. 6, 1910

ASSOCIATES

ACKERMAN, JOSEPH MOODY.....	1919
ADAMS, CHARLES FRANCIS.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK TALLANT.....	Feb. 6, 1907
ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, BERT HEALD.....	June 22, 1917
BAILEY, CHARLES E.....	———, 1905
BAIRD, LUCY HUNTER.....	June 19, 1913
BANKS, MISS MARTHA BURR.....	Dec. 13, 1917
BARLOW, CHESTER.....	Nov. 6, 1902
BATTEN, GEORGE.....	Feb. 16, 1918
BAUR, GEORG [HERMANN CARL LUDWIG].....	June 25, 1898
BLAIN, MERRILL WILLIS.....	Dec. 26, 1918
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BERIER, DELAGNEL.....	Feb. 11, 1916
BETTS, NORMAN DEWITT.....	May 21, 1917
BILL, CHARLES.....	April 14, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 28, 1901
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BODINE, DONALDSON.....	Aug. 26, 1915
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER HODGES.....	Jan. 5, 1900
BRAINARD, BARRON.....	May 15, 1919
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William Brewster

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IN MEMORIAM: WILLIAM BREWSTER.

Born July 5, 1851 — Died July 11, 1919.

BY HENRY WETHERBEE HENSHAW.

Plates I and II.

It has become the time honored custom of the Union, when one of its fellows has passed on to that undiscovered country from whose bourn no traveller returns, to briefly commemorate his life and services to the Union and to Science. It is peculiarly fitting that this should be done in the case of William Brewster, to whom more than to any other man is due the origin of the American Ornithologist's Union, and whose services to it began with its birth and terminated only with his death.

William Brewster was born in Wakefield, Massachusetts, July 5, 1851. He died in Cambridge July 11, 1919. His father, John Brewster, was born and brought up in Wolfboro, New Hampshire, and subsequently became well known as a successful Boston banker. His mother was Mrs. Rebecca Parker (Noyes), who was born in East Bradford (now Groveland) Massachusetts.

It was William's belief that the origin of the Brewster family was traceable to Elder Brewster of the Mayflower, but he was not much interested in such genealogical matters, and apparently never took the trouble to verify his belief.

On February 9, 1878, William was married to Caroline F. Kettell, of Boston, who survives him.

William was the youngest of four children. His sister and two brothers died in early childhood. They were old enough, however, to attract the notice of the poet, Longfellow, a near-by Cambridge neighbor, and who, no doubt, frequently saw them at play as he passed and repassed the old colonial mansion, shaded by venerable English lindens. It was the early death of the children that inspired the poem entitled 'The Open Window,' which begins:

"The old house under the lindens
Stands silent in the shade."

In 1845 John Brewster bought the Riedesel mansion on the corner of Brattle and Sparks Streets, Cambridge. It was so called because the Baron Riedesel, with his wife, was quartered there after the surrender of Burgoyne. Brewster's father took pleasure in showing to his guests a window pane, not now in place, on which is scratched with a diamond the family name, Riedesel, presumably the work of the Baroness during her enforced residence. The history of the old house, supposed to date back to about 1750, would make interesting reading, but we may pause here only to note that Sewall, a Royalist, at one time occupied it, and was mobbed there during the stirring events of 1774, when loyalty to King George was treason to the States.

Brewster spent his boyhood in the historic mansion, the lower story of which was later replaced by his father with one containing the modern improvements. Later still, about 1887, an entirely new house was built on the site of the old one by William himself.

He was educated in the public schools of Cambridge. From the Washington Grammar School he went to the Cambridge High School, taking there the usual preparatory course for Harvard, which, however, he was destined not to enter. Never robust, he suffered much during youth and early manhood from impaired sight, which, sometimes for considerable periods, precluded all reading and study. In consequence, during his last and most important year in school, he was able to read very little, and his devoted mother read aloud to him many of his lessons, which he committed to memory as best he could. Small wonder was it that, under these circumstances, he finally decided to relinquish all idea of a college education. Though he did not underrate the advantages of a scholastic train-

ing it may be doubted if the lack of it hampered his career to any appreciable extent. Little of the knowledge he himself prized and sought was to be gained in college or gleaned from books.

As a boy Brewster appears to have been much like the average lad of his time but of gentler mold than most. Though in no respect effeminate he never cared for rude or boisterous sports, and although occasionally he was a contestant on the football field his was usually the part of the onlooker rather than of the participant. In fact, even in later years, his interest in and knowledge of games of any sort, as cards, billiards and the like was of the slightest, though he had no objection to them on moral grounds.

His-life long friend, Ruthven Deane, informs me that in his boyhood William was very fond of horseback riding, and that they frequently rode together before breakfast. He must have relinquished this form of exercise early, since I never saw him on horseback or heard of his riding after I knew him. Ruthven also recalls the fact that in the early seventies Brewster joined the Cambridge Rifle Club, became fond of target shooting, and for a time was a regular attendant at the contests among the members and with the Harvard Rifle Club.

He never greatly cared for the theater, although, on the rare occasions when he went, he showed that he could enjoy a well-acted play, or good concert, as well as most. He attended dancing school as a youth, but apparently cared little for this social accomplishment, and after a time entirely gave up dancing.

It is always of interest to trace the influences that have induced a man to follow a given career or to take up a certain line of study. Brewster seems to have given no signs of any special bent towards the study of Nature until he was about ten years old, when he made the acquaintance of Daniel C. French who was about the same age. During the next four years he and Dan came to be close comrades, and in that period was laid the foundation of a life time intimacy and friendship.

Mr. French has kindly communicated to me some interesting facts in regard to this period of Brewster's life when they were inseparable chums. William's father, it appears, in his younger days had been something of a sportsman. When William was about ten his father gave him a single barreled gun, and taught him

how to use it without undue peril to himself and other people. It happened that Daniel's father, also somewhat of a sportsman, had learned to stuff and mount birds, and in his house were two cases of specimens of his taxidermic skill. These at once attracted Brewster's attention, and here we have the very beginning of his interest in birds and the genesis of his ornithological career. How natural it was that a little later he and his chums should be keen to utilize the opportunity presented to learn how to stuff birds, particularly since they had the means of obtaining specimens.

In his 'Birds of the Cambridge Region' Brewster gives us the exact date of his first lesson, and says: "On January 1, 1862, my friend Mr. Daniel C. French called at our house to give me my first lesson in taxidermy, an art known in those days to but very few persons save the professional bird stuffers." Mr. French no doubt proved a willing teacher and presently we find a number of lads, Will Brewster, Dan French, Ruth Deane, and Dick Dana, all neighbors and of about the same age, on the alert to collect eggs and stuff such birds as their skill enabled them to bring to bag.

The other boys soon gave up active ornithological pursuits, one to attain fame in the exacting career of a sculptor, another to successfully pursue the no less exacting career of a lawyer, the third to devote himself to business pursuits. Other tastes and duties led them to different fields, but Brewster unknowingly had found his life's work, which he was to follow to the end. He must have set to work to study and collect birds with great ardor, for when I first met him in 1865 he had several cases of birds mounted on stands, the work of his own hands, with many nests and eggs, while his knowledge of local Massachusetts birds was accurate and extensive.

It was not until several years later that he learned how to make skins. These were so quickly fashioned and so easily stored that Brewster soon abandoned the mounting of birds when his collection must have numbered several hundred.

Brewster's esthetic sense would not permit him to be content with the unsightly, shapeless bird skins which too often found their way into the museum cabinets of that day. He was a careful collector, and the newly shot bird was lifted from the ground tenderly and its ruffled plumage cleaned and gently smoothed as of some precious thing, which indeed it was in his eyes. He soon became

a cunning craftsman in the art of making skins, and he never begrudged the time and labor necessary to shape the specimen into a thing of beauty. In his eyes it thus served two purposes, as a scientific specimen to be labelled and laid away for study, and as an object of beauty to satisfy the esthetic sense.

There were few books on American birds in those days, and the student of the present time with his command of almost limitless literature can hardly realize how difficult to travel were the ornithological paths of that period. Fortunately in Mr. French's library was a copy of Nuttall, and Brewster, as soon as his tastes were declared, received from his father a copy of the octavo edition of Audubon. There was little within the covers of these two treatises that he had not soon made his own, so far, at least, as the accounts related to New England birds.

Brewster and I became acquainted in 1865, in the Cambridge High School, where we took the same preparatory course for college. Our tastes proved to be very similar, and the acquaintance soon ripened into a firm and enduring friendship, which was interrupted only by his death.

The several years that followed 1865 were very happy years for both William and myself. Our studies were not very exacting, and all our spare time was given up to scouring field and forest for birds and eggs. The health of neither of us was on a firm basis, and this fact, which we perhaps made the most of, reconciled our parents to our outdoor life, especially after a college career was closed to us.

It was our custom to start for the woods soon after daybreak, often afoot, sometimes in a buggy, for the Fresh Pond swamps (a favorite haunt), or for Belmont, Waverley, Lexington, or Concord. Occasionally we were joined on these trips by Ruthven Deane or Henry Purdie, when they could get away from business. As the result of this activity Brewster's collection grew apace until it contained all but a few of the local species. It ultimately became one of the largest private collections ever made in this country, and in some respects it is by far the most valuable. It is a pleasure to state that in accordance with long cherished plans Brewster left it in its entirety to the Museum of Comparative Zoölogy of Harvard University.

As in his life time it was always within the reach of the earnest bird student for purposes of study, so he desired it to be after his death.

Brewster's father was, as stated, a keen business man and a very successful banker, and it was natural that he should desire to pass on to his only child a highly lucrative and successful business, the fruits largely of his own energy and sagacity. William was a dutiful son and loved his father who, though no naturalist, sympathized with his son's tastes and was always ready to grant his every reasonable desire. In response to his father's earnest wish that he should at least give business a trial he entered his father's office in 1869, when he was about 19, with the understanding that if, after a year's trial, he found himself unfitted for a business life, he was to have his liberty and follow the bent of his own mind. Otherwise, after he was duly qualified, he was to enter the firm as a partner and ultimately to succeed his father on his retirement. With an aim of mastering the business from top to bottom he started in as messenger, and after a short time was promoted to a more responsible position. But it is not necessary to follow his short business experience further than to say, that in something less than a year he had convinced himself, and incidentally his father, that he had no interest in a business life and was not fitted for it. The experiment therefore terminated. Nevertheless I am persuaded that Brewster possessed the making of a successful business man had necessity compelled him to adopt business as a means of livelihood. In after years he proved himself in his own affairs to be keen and of sound judgment, and to be an excellent judge of character, while his prudence and sagacity enabled him, not only to keep what his father and mother left to him, but to somewhat augment his inheritance. If Brewster's father was disappointed by the failure of his hopes he showed no signs of it, but ever treated his son with the same invariable kindness and sympathy.

This would seem to be a fitting place in which to speak of Brewster's connection with the Brewster Free Academy of Wolfboro, New Hampshire. After due provision for his son and others of his relatives, his father left the balance of his large estate to found and perpetuate this school. He seems to have had a strong affection for the place of his nativity, and to have believed that a well

endowed academy in a rather remote rural district would be productive of great and lasting good.

The plan was not a hasty one but had been in his mind for many years, and had been considered from many points of view. William had long been aware of the disposition his father intended to make of the greater part of his wealth and, while in nowise opposed to his plans, was by no means sure of the wisdom of the act. As time went on, however, he wholly changed his mind, and came to the conviction that his father had shown sound judgment and that, on the whole, his wealth could not have been better bestowed. He served faithfully till his death as a trustee of the Academy, to which his father had appointed him, and always took great interest in the welfare of the school and in carrying out his father's plans so far as he was able.

In the minds of many Brewster is almost as inseparably connected with Concord as Thoreau, but the inception of what may be termed the Concord experiment was largely accidental. Brewster was always fond of the place, and for years its woods, meadows, and its picturesque winding river were familiar haunts to him. He made frequent hunting trips there, often in company with one or the other of his two friends, Dan French and Jim Melvin, both of whom lived in the town. Indeed William and his wife spent two consecutive summers, 1886 and 1887, in the old Manse, redolent with memories of Hawthorne, and which has become immortalized in his 'Mosses from an old Manse.' It is of interest to know that this book was written, or at least prepared for the press, in the same apartment in which Emerson had penned his 'Nature' six years before, surely enough honor for the little cramped room known as the "Manse study."

About 1890, learning that Davis' Hill, on the Concord, which was covered with large and venerable pines, was to be sold, he purchased it for the sole purpose of preserving its timber from certain destruction. Charmed with the locality he afterwards acquired the adjoining Ball's Hill, which is one of Concord's landmarks and was mentioned by Thoreau, if, indeed, it was not one of his haunts. Subsequently Brewster built several log cabins on the river bank in which he and his friends could camp. Later still he enlarged his holdings by the purchase of the John Barrett

farm and still later the 'Ritchie Place,' so that finally he possessed some three hundred acres, mostly woodland, which he called collectively "October Farm."

Its timber consisted chiefly of pines, oaks and birches, and it was a sore trial to him when, despite a large yearly expenditure in their behalf, the brown tails and 'gypsies' killed practically all the oaks. They were his joy and pride, and the place was never quite the same to him after their glory had departed and their bare branches were raised to him as if in mute appeal for aid.

Not the least valued of his farm possessions was the old but still well preserved Barrett farm house, which dated back at least two centuries, and between the old house, shaded by venerable elms, and the river camp, on the banks of the classic Concord, no lover of Nature could ask to be more favorably placed.

At one time he found much pleasure in canoeing, in which he became expert, and he made himself familiar with every muskrat house for miles above and below his camp and with the haunts of the rails, bitterns and ducks in the marshes. He was very fond of sojourning for weeks at a time in his log cabin until the river was invaded by power boats, the incessant throb of whose motors proved torture to his sensitive ears. As time went on, too, the water of the Concord became polluted by the refuse of the mills along its banks, which resulted in the practical extermination of its water plants and fish, and he ceased to care for his old river haunts.

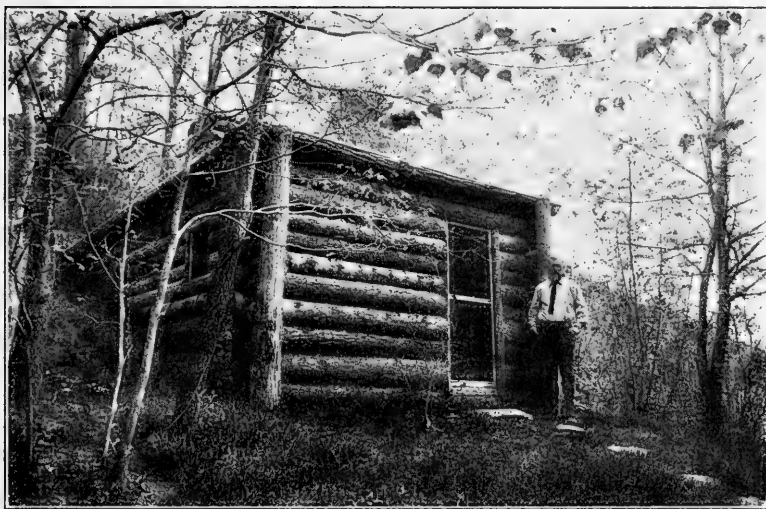
Later, when in Concord, he lived in the farm house often in company with Henry Purdie, of whom he was very fond. Here, as elsewhere, the comfort of himself and his guests were looked after by "Gilbert," his factotum and friend, and he came to be very fond of the faithful, zealous, and efficient colored man who for years did his bidding and ministered to his needs.

Brewster had furnished the farm house with old fashioned belongings befitting its age. These he collected with great taste and judgment, so that everything looked in keeping and as though a part of its surroundings.

The times on the farm which I recall with the greatest pleasure were our daily strolls in the near-by woods, and the evenings, which we spent, each in an arm chair, before the open fire of gray birch



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1. THE BREWSTER MUSEUM AT CAMBRIDGE.

2. THE CABIN AT CONCORD.

logs. He devoted his evening hours to his always voluminous correspondence, and to writing up his bird notes for the day. But he was never too much engrossed to pause long enough to discuss a paragraph in one of Thoreau's books, of which naturally *Walden* was his favorite, or to listen to anything of moment out of the book I was reading. For the writings of Thoreau he had high regard, and was very familiar with them, as he was also with his old haunts by pond and river.

Being untrained in farming and having no zest for manual labor, Brewster always employed a practical farmer and his wife to care for his poultry, of which he had a fine flock, to look after the cows, and to raise vegetables sufficient for the needs of his own family and for distribution among his many friends. The surplus, never very great, was sold; but he never tried to make the farm pay, or even to make it self supporting. When the birds and squirrels raided his beans, corn and strawberries, his reply to the complaint of his farmer always was; "all right; remember to next year plant more; plant enough for all of us." For he reckoned his bird and mammal tenants as partners in the concern and, as such, entitled to whatever they chose to appropriate. To meet a gray squirrel homeward bound a half mile or more from Brewster's corn patch, with a big ear of corn in his mouth, was a frequent occurrence; and the vituperative remarks addressed to the rightful owner by the enraged squirrel at being interrupted in his attempt to make an honest living were, as Brewster used to say, "worth more than a dozen ears of corn."

The little interest he took in farming chiefly centered in the restoration and care of a small apple orchard, many of the trees when they came into his possession being superannuated and decayed. These he doctored and grafted to superior kinds of fruit and sprayed carefully until he brought them into vigorous bearing. He was very proud of his apples. He was also much interested in the construction of roads through the woods, which he laughingly explained were for use when he and his friends became so decrepit as to be unable to walk.

Though never a professed botanist Brewster had an excellent speaking acquaintance with the bulk of New England trees and shrubs, and, to a lesser extent, with its flowering plants. He

greatly admired shapely oaks and stately pines, and cut many vistas through his woods so as to bring into prominent view trees whose glories otherwise would have been hidden. He also took great pleasure in transplanting to his woods rare shrubs and flowering plants from contiguous localities, or from remote parts of the State, and they rooted and grew into his very fiber and became a part of him. He visited them often, and always as shrines before which he gave praise and offered worship.

He also cultivated about the house garden-flowers of the old fashioned type, of which he was very fond. Naturally he was very successful with them, so that most of the summer the old home borrowed the freshness of youth from the blaze of floral color around it. It was down the old cow lane back of the house, resplendent on either side with asters, golden rods, and various flowering shrubs, that William most delighted to walk. The lane opened into a winding woodland path which led to the "birch pasture," a favorite resort of the migrating warblers, and he said that, though he followed this path daily, and sometimes several times a day, he never tired of it, and that it was always as fresh in his eyes as if newly discovered.

But none of the things mentioned appealed to Brewster's interest as strongly as the birds, and the chief value of the place to naturalists rests upon the bird notes he made here. Nowhere else was the same experiment with bird life ever tried, at least for an equal length of time. For twenty years no gun was ever fired on October Farm, nor a bird or mammal ever molested by man. Hawks, crows, bluejays, skunks, foxes and other birds and beasties, if not equally welcome in Brewster's eyes, were never molested. Each lived its own life according to its instincts, and Nature was allowed to work out her own problem in her own way. Beyond providing boxes for the hole-building species to nest in and planting seed plants for their sustenance, Brewster interfered with them not at all.

The results will surprise many. They certainly surprised Brewster. For, at the expiration of some twenty years, there were apparently as many birds on the place as there were at the beginning of the experiment, *but no more*. True, there had been changes in the distribution of the species, since the brushy haunts of the

warblers and vireos had grown up, and the shrubby loving species had shifted their quarters elsewhere. But the number of partridges, for instance, had not increased over the original eight or ten, although each year they nested and reared most, if not all, their young. For many years also a pair of great crested flycatchers nested in the cavity of a certain apple tree and every year brought out a brood of young. Nevertheless only one pair came back each spring, and he was unable to find any in the surrounding territory. So it was with other species. Brewster's explanation in the case of the partridges was that the old birds, with the authority of vested rights, drove away the younger ones which, had they been allowed to remain, would have overstocked the place according to their own formula. But he found it difficult to thus explain the failure of increase in bird life generally on the farm. He was decidedly of the opinion, however, that his experiment proved that to increase the number of small birds in a given area one must at least do police duty and destroy the predacious birds and mammals, large and small. And this he pointed out had been the experience on the large game estates of England and Scotland, where no small part of the keeper's business is to keep down the vermin.

Brewster greatly regretted that all interest in his Concord place was destined to lapse when he was through with it, and he frequently debated some possible use it might be put to. At one time he thought of offering it to the town of Concord, but deemed that its remoteness from the town center would militate against its usefulness as a local park. He also discussed its availability for a duck and game breeding place, or for a bird refuge. But its availability for any of these uses, for one reason or another, seemed questionable, and finally in despair of finding a promising scheme, he dropped consideration of it.

Throughout the earlier years of his life Brewster was a keen and enthusiastic sportsman. When a boy in the high school, dawn often found him sculling his skiff over the placid surface of the near-by Fresh Pond in quest of waterfowl. He was a good shot and cherished his gun and dog with an abiding love. He was rarely without a serviceable pointer or setter, which, more often than not, he himself had trained. He never wholly outgrew his love for sport and one of the last pictures of him that lingers in my memory was as

he stood in the old farmhouse one evening after we had been recalling past hunting experiences, and, taking from the rack his favorite double-barrel, he threw it to his shoulder and wondered if, as in former days, he could still cut down an old cock partridge as it flew through the brush. He not only loved sport but he loved sportsmen, and delighted to exchange experiences with the old hunters he used to meet in Maine or with the "marsh gunners" of the Atlantic coast. As he advanced in years, like many other sportsmen, he ceased to shoot simply because shooting necessarily involved the taking of life, and this finally became impossible for him.

When the Cambridge place became his own, on the death of his father in 1886, one of his first improvements was a cat proof fence, upon the construction of which he spent much time and thought. This proved an effective barrier against the tabbies of the neighborhood, and insured the safety of all birds that visited the spacious garden, which included something like two acres. Soon there were hosts of birds to whom were born the glad tidings of food and safety awaiting them when they stopped there on their passage north and south, and many of the rarer small birds of the region sooner or later were noted from the windows of his study. A serviceable supply of water for drinking and bathing was provided, as well as berry-bearing shrubs and seed-bearing plants for food, and the "Brewster Tavern" exclusively for the accommodation of birds became very popular among his avian friends.

Another important improvement was the museum, which he built in 1886-1887, a small brick and fire-proof structure in the rear of his house for the safe accommodation of his books and of his growing collection of birds, and to serve as a study where he afterwards did his writing. This was the home of the Nuttall Club and here it held its semi-monthly meetings for many years, or until his death.

As his library increased in size and his collection of birds grew the routine work demanded more and more of his time, and in 1897 he was so fortunate as to secure the services of Walter Deane, an old and tried friend of whom he was very fond. As Assistant in Charge, he was able not only to relieve Brewster of much of the museum work but to materially aid him with his correspondence. He continued to assist him until 1907.

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It will surprise many who are familiar with Brewster's writings and have admired his smoothly flowing periods and felicitous methods of expression, to know that he wrote only with great difficulty and labor. Whatever success he achieved as an author, and much may be said of the excellence of his literary work, was done with much pain and travail. The standard he set for himself was very high, and frequently, in order to attain it, he had to reshape or rewrite an article several times before he was willing to commit it to print, and then usually not without doubts and painful misgivings. At times, too, he had to contend with ill health which, often for considerable periods, made writing, never easy, doubly difficult or impossible. Thus was prevented the preparation of many papers he had planned to write and publish. Under the circumstances the wonder is not that he published so little but that he published so much. His wife rendered important aid in his literary efforts, not only by timely encouragement and wise criticism, but by typewriting much of his manuscript. This coöperation he greatly prized and it was a direct and an important stimulus to production.

Though he never wrote many reviews Brewster, nevertheless, was a model reviewer, being careful, fair and conscientious, always weighing the merits and demerits of a book with scrupulous impartiality. That he had the capacity of a successful editor is not open to doubt as was shown when he was chosen to edit Minot's 'Land and Game Birds of New England.' In dealing with the book he showed wise restraint in the use of the editorial pen, and left the author, so far as possible, to tell his story in his own way. On almost every page, however, he made important annotations in the form of foot notes, which, it is not too much to say, added greatly to the value of the work. His total scientific output amounted to upwards of three hundred papers of all kinds, some of them, as his 'Birds of Lower California' and 'Birds of the Cambridge Region,' being volumes of considerable size and forming notable contributions to faunal literature.

His productivity was greatest in the period from 1876 to 1900, after which he produced much less, though some of his most important publications appeared after 1900. He published practically everything he wrote in scientific journals, and apparently was never

tempted to increase the number of his readers by publishing in popular magazines and, indeed, with characteristic modesty, thought he was unequal to this form of writing. As a consequence he is less widely known as a writer than he deserves to be, few indeed outside of the ranks of ornithologists being aware of the literary treasures hidden away over his name in the journals and proceedings of scientific societies.

And here a subject may be touched upon that the young ornithologists of the present day may well take to heart. Brewster began to keep a diary at an early age, and he made it a rule to take as much pains in writing of the day's happenings as though he were writing for the printer. It is quite possible that this habit resulted from his knowledge of Thoreau's methods. In any event his day's tasks were never deemed ended until a page in his diary had been written. And we may be very sure that to his habit of keeping a diary and carefully committing his notes on birds every day to paper were largely due his felicitous style, discrimination in the nice choice of words, and general success as a writer.

There is no need here to tell in detail of the Nuttall Ornithological Club, of which he was the president for so many years, or the prominent part he played in its origin and career. It came into being in 1873 as a natural consequence of the enthusiastic interest in birds on the part of a small coterie of young fellows in and around Cambridge, and the interest has grown rather than lessened as the years have gone by.

Inspired by the example and success of the Nuttall Club, in due course the American Ornithologists' Union was established on a national basis, and rapidly grew into a strong organization. Though his interest in and love for the Nuttall Club was in nowise weakened, from the very first Brewster took great interest in the Union, and was one of the three to issue the call for the convention which met in New York, September 26, 1883. After the organization was effected he was appointed one of the committee of five to assist in a revision of the classification and nomenclature of North American birds. He served until his death upon this important committee, and his extensive knowledge of the birds of New England and of other regions enabled him to perform invaluable service in connection with it. In 1895 he was elected President

of the Union and served till 1898. For several years, 1880-1889, Brewster was connected with the Boston Society of Natural History, and had charge of its bird and mammal collections. Later, in 1885-1900, he took charge of the same departments in the Cambridge Museum of Comparative Zoölogy, and, after 1900 until his death, was in charge of the Museum's collection of birds.

His connection with Harvard University through its museum was a source of great satisfaction to him, not only because of his congenial duties, but because through them he was brought into personal relations with Alexander Agassiz, for whom he had great admiration and regard. Upon his death in 1910, Agassiz was succeeded as Curator of the Museum by Samuel Henshaw, with whom Brewster had long been on terms of intimacy and for whom he had the most cordial regard.

Brewster was always greatly interested in the movement for the protection and increase of North American birds, and rendered very important service in connection therewith. In 1886 he was appointed a member of the Committee on Bird Protection of the American Ornithologist's Union, and as such was one of the organizers of the first Audubon Society. He was a member of this Committee for many years, and later became one of the Directors of the National Association of Audubon Societies. Later he served for a number of years as President of the Massachusetts Audubon Society.

After serving on the Board of Directors of the Massachusetts Fish and Game Protective Association a number of years, in 1906 he was elected its President, retaining the office for two years.

He was much interested in the movement which led to the formation of the American Game Protective and Propagation Association. When this was organized in 1911 he was appointed a member of the Advisory Committee on which he served till his death.

Far too modest and doubtful of his merits to push himself into the limelight as a seeker of honors, he was greatly pleased with those which were bestowed on him, and the more so that they came entirely unsought. Amherst conferred on him the honor of A. M. in 1880, and Harvard that of A. M. in 1889.

Brewster had comparatively little of the spirit of the pioneer and explorer. With all the world open to him he liked best to

follow well beaten paths and to revisit year after year the scenes and localities already endeared to him by familiarity and association. This explains in part why he spent so much time in Concord and why he revisited Umbagog for so many successive years. Because of this habit he was enabled to gather an unparalleled amount of data on the birds of these respective regions, and it is doubtful if the birds of any single locality elsewhere have been so intensively studied as those of Concord and of Umbagog Lake by Brewster. His plans included the publication of several volumes based on these notes. Fortunately his notes and manuscripts were bequeathed to Harvard University, for this justifies the belief that, not only will his 'Birds of Umbagog Lake' be published, the first volume of which was left by him practically completed, but that all his voluminous notes made in Cambridge, Concord and elsewhere will also be printed, so far as this can be done. And what more acceptable and fitting monument than this could be erected to commemorate his life's long and fruitful activity in the field of ornithology that he loved so well?

While thus by preference Brewster cultivated near-by fields, nor cared greatly to penetrate remote districts or the untrodden wilderness, he was by no means content to stay wholly within the limits of New England, much as he loved his native soil. On the contrary he made several journeys far afield and usually in company with one or more friends. Thus he made three trips to England: in 1891, 1909 and 1911, and one to the continent in 1897. He visited Scotland more than once, and spent some time there with Harvie-Brown, to whom he was much attached. Most of the time abroad, however, was spent in England, where he devoted much attention to outdoor observations and to getting acquainted with English birds, which he had hitherto met only in books, and in listening to their songs and studying their habits.

He was greatly pleased with England, and his visits there, as he said, were much like going home after a long absence. Apparently in England he never felt like a stranger in a strange land. He specially admired its broad estates, its well kept roads and hedges, and its general air of thrift and tidiness. He was enthusiastic also over the English character and found the men cordial, hospitable and lovable.

In illustration of Brewster's charm of manner and his ability to enlist the attention and interest of strangers, an incident may be related that occurred when he was at Lyndhurst in the New Forest in the midsummer of 1909. Visiting the smoking room of the Inn the evening after his arrival, he found there several men smoking and reading their papers, each at a separate table. Singling out the one who seemed to him to have the most interesting face, he made his way to his table and, as the gentleman glanced up to see who the intruder was, he introduced himself, as an American who wanted to ask a few questions about the New Forest. The questions duly answered, a long conversation of a humorous and discursive character followed in which, among other things, the respective characteristics of Englishmen and Americans were discussed, apparently to the great interest and amusement of the other guests. It was not until the stranger had left the room that Brewster learned he had been conversing with the famous author, Kipling. During the following days he met Kipling frequently, found him a most genial companion as well as a most interesting conversationalist, was introduced to his wife, and finally received an invitation to visit them in their English home.

It was very fortunate that early in his career Brewster became acquainted with the Umbagog Lake region. He first visited it in June 1870, when C. J. Maynard, Ruthven Deane and Henry Purdie also were there. The region was little known in those days, save to disciples of good old Isaac Walton, and possessed manifold attractions in its deep forests, its beautiful lake and waterways, abounding in fish and an ample supply of large and small game. In the eyes of a Massachusetts ornithologist it possessed an added attraction in a long list of warblers and other birds which here found a summer home, but elsewhere to the south were known chiefly or only as migrants. Brewster at once became strongly attached to the place, which not only satisfied his longings as an ornithologist but strongly appealed to the artistic and aesthetic side of his nature. For many years he rarely missed sojourning at the Lake during the summer or fall, and here he gathered an unparalleled harvest of notes and data, especially on the water birds, which found in these comparative solitudes ideal opportunities to nest.

For several years he maintained a most attractive camp on Pine

Point, near the foot of the Lake, where numbers of his ornithological friends visited him. He also had built for service on the Lake a houseboat designed with reference to comfort and his special needs as a student of bird life. He cultivated a wide acquaintance with the guides and lumbermen of the district, and not the least of its many attractions was the opportunity afforded of meeting these men annually on their own ground and hearing from their lips the story of their experiences and of still earlier days in the wilderness. He was particularly fond of canoeing on the Lake and made much use of the canoe in his daily trips. Indeed some of the accounts of birds which he wrote for his 'Birds of Umbagog Lake' were penned as he floated here and there on the Lake's placid bosom, with the setting of the bird biographies he was engaged upon spread out before his very eyes.

With the lapse of time, however, Brewster's interest in that region lessened, chiefly because of the influx of visitors and campers, who were attracted in ever increasing numbers by the growing fame of the region. Aloofness and solitude had been its chiefest charms, and when these departed little was left to a man of Brewster's temperament, so that during the later years of his life, after 1900, he never revisited it.

Brewster made a trip to Ritchie County, West Virginia, in 1874, in company with Ruthven Deane and Ernest Ingersoll. They were there from April 25 to May 9, and the party secured many nests, eggs and bird skins. Brewster published a paper in the *Annals of the Lyceum of Natural History of New York* on the results obtained in this, then little known, region. As was the case with most of his faunal papers, this article contained copious notes on the habits and songs of many of the species included.

In April 1878, he visited his friend Robert Ridgway, at Mount Carmel, Illinois, and spent a month or more with him in collecting birds and gathering notes on a number of species until then unknown to him. Notable among the strangers was the beautiful Prothonotary Warbler, which inspired the greatest enthusiasm. For an interesting account of this bird, written in his best vein, the reader is referred to his article in the *Bulletin of the Nuttall Club* for October 1878. He always dwelt with great pleasure on the incidents of this trip, and spoke fondly of the delightful comradeship of Ridgway.

In the spring of 1881, Brewster was invited to make one of a party organizing for a trip to the Gulf of St. Lawrence. The expedition, as stated by him, was "undertaken partly for pleasure, but chiefly for scientific exploration and the collection of fossil birds, insects and plants." The party consisted of the following persons: Professor Alpheus Hyatt, Mr. Samuel Henshaw, Messrs. E. G. Gardiner, W. H. Kerr, N. R. Warren and himself, and sailed from Annisquam, Massachusetts, in the *Arethusa*, a schooner-rigged yacht of seventeen tons.

He published an account of the trip in the *Proceedings of the Boston Society of Natural History*, Vol. 12, 1882-83, from which the following is quoted:

"The trip, as a whole, was attended by about the usual mixture of pleasure and hardship, success and disappointment. Its drawbacks and failure were mainly unavoidable, for our plans had been made with care and forethought, and the vessel equipped to a fault; while the social composition of our party proved exceptionally pleasant and harmonious. But we started too late in the season and the weather during most of the summer was simply abominable."

Most of the ornithological specimens accruing from this trip were given to the Boston Society.

In the spring of 1882 Brewster joined J. A. Allen in Colorado, who was there on a collecting trip undertaken out of considerations of health. He spent six weeks with him, collecting the birds of the region, studying their habits and making notes of the spring migration in this interesting region of plains, foothill and canyon. This is as far west as he ever travelled, and he always looked back with great satisfaction to this journey, rich as it was in new experiences, and to the first hand knowledge he thereby gained of the plains region and of its wild life, so unlike that with which he had hitherto been familiar.

In May 1883 Brewster visited South Carolina, making his headquarters at Charleston. His special errand was to look for the Swainson's Warbler, a species discovered in 1832, but lost sight of for over half a century. In his search he was assisted by Arthur T. Wayne, of whom he became very fond. Although unsuccessful the first season they were entirely successful the two following years, and Brewster was enabled to secure a large number of specimens and to

obtain a very full knowledge of the bird's song and habits. He also secured its nest and eggs.

He was much interested in bird migration, and was an earnest student of its varied phenomena. In 1885 he made a trip to Point Le Preaux in the Bay of Fundy for the express purpose of studying the behavior of birds during the migration as seen from a light house. He remained there from August 13 to September 26, living with the light house keeper, and making notes on migration. It was doubtless largely the interesting data obtained on this trip that stimulated him to produce his only formal paper on bird migration, which was published as the first 'Memoir' of the Nuttall Ornithological Club in 1888. This has been well termed a classic.

On his return north from Charleston in 1885 he visited Asheville, North Carolina, May 23. From there he made a wagon trip into the mountains, during which were recorded many interesting observations on the habits of the birds. His account of the birds seen on this trip is to be found in the Auk, Vol. 3, 1886.

In 1890 (March 19-April 1), he joined Frank Chapman in a trip down the Suwanee River, Florida, in a houseboat. A satisfactory collection of birds was made and many interesting notes obtained of the local and migrating species. The results of the trip appear in a joint paper in 'The Auk' for 1892.

Two years later, in 1893, we find Brewster and Chapman in the island of Trinidad, where Brewster was not only introduced to a new fauna but harvested an entirely new crop of experiences. This was his first and only visit to the Tropics. He treasured his experiences there as among the most interesting of his life, and in after years never tired of recalling the varied scenes and incidents of his stay there.

Besides the trips mentioned, made for the double purpose of collecting specimens and of acquainting himself with the habits of rare or little known birds in their native haunts, Brewster, from time to time sent out, at his own expense, collectors whose chief errand was the exploration of comparatively unknown territory and the acquisition of birds to fill gaps in his collection. Some of these were remarkably successful, and by this means he not only secured priceless cabinet material but added greatly to ornithological knowledge. The collections thus made, with the notes made by the collectors, furnished the basis of a number of important papers.

Thus he sent the well known collector, Frank Stephens, to California and Arizona in 1881 and 1884. In May and June of 1883 George Ower Welsh made a collecting trip for him to Newfoundland.

In 1883, 1884 and 1885, R. R. McCleod collected for him in Chihuahua, Mexico.

In 1887 he sent Mr. Abbott Frazer to the peninsula of Lower California.

In January and June of the same year Mr. John C. Cahoon visited Arizona and Sonora, Mexico, and made extensive collections.

In many respects Brewster was unusually well equipped as a naturalist and a student of birds.

He did some excellent systematic work. He possessed a keen eye for distinctive differences and described many new species of American birds. So sound and conservative was his judgment in proposing new forms that practically all the birds named by him have proved valid.

Nevertheless by preference he was not a closet student but was an outdoor man, to whom the dried skin was merely a symbol and the living creature of infinitely more interest and importance. Naturally deliberate and slow of movement, he was a good and untiring walker in his youth, and possessed excellent eyesight for outdoor work. Indeed his eyesight improved as he grew older, and he was never compelled to have recourse to distance glasses, even during the last years of his life. His hearing was extraordinarily acute, and his ability to recognize the notes of birds at a distance and amid other and confusing sounds was little less than marvelous, and far exceeded that of any one I ever knew. Along with his phenomenal hearing went a good memory for bird notes and songs, the study and analysis of which always greatly interested him. Indeed he was attracted by the notes and calls of all living creatures, and deemed no time wasted that was spent in tracing them to their sources.

Here I cannot refrain from a short quotation from his 'Voices from a New England Marsh,' one of many similar paragraphs in his happiest vein, which illustrates his interest in the voices of his humble friends and the emotions they awakened in his soul. After speaking of the songs of the Rusties and of those of the Song and Tree Sparrows he adds:

"These voices with, perhaps, the tender, plaintive warble of some passing bluebird or at evening, towards the close of the month, the merry peeping of Pickering's hylas are the characteristic March sounds of the Fresh Pond marshes as well as of many similar places in eastern Massachusetts. How they smooth and refresh the senses after the long silence of winter, breathing to every one of refined sensibilities the very essence of early spring! To those who have long known and loved them they are inexpressibly grateful and precious, touching the chords of memory more subtly than do any other sounds, recalling past associations, albeit often saddened ones, and filling the heart with renewed courage and hope for the future."

He was a patient and untiring observer, and his intense interest in bird and other outdoor life never knew abatement. Summer and winter, in sickness and in health, from youth to old age his interest continued undiminished, and only death itself sealed to him the Book of Nature. Indeed in his last moments, when the voices of the friends about him awakened no response, he roused himself sufficiently to listen to the song of a robin which came to his ears from the linden tree outside his window, fitting requiem to the passing soul of the ornithologist.

William Brewster was tall and well proportioned, and when he developed into full manhood was a strikingly dignified and handsome man. His habitual expression was kindly and engaging, and few people met him who were not at once drawn toward him by his kindly bearing and courteous manners. He did not mature early, but when he came into his own, and his mind expanded, and his experience widened he became a charming and very interesting talker.

While Brewster possessed none of the gifts of the orator and made no effort to cultivate public speaking, he was entirely self possessed when he rose to address an audience and spoke interestingly and to the point, chiefly perhaps, because he always had something definite and illuminating to say.

He had a genius for friendships, and made many friends whom he grappled to his soul with hooks of steel. He had a peculiar reverence for womankind, always treated them with the utmost deference, and always spoke of them with respect.

He had a well developed sense of humor and liked to exchange repartee with his friends, and always enjoyed a witty story. But

stories of the grosser sort had no interest for him and were, indeed, abhorrent, and his friendship included none who were given to them, or to gross practices.

He was charitably disposed to all, and inclined to judge the delinquent leniently and with forbearance. He never spoke ill of any man. He was generously inclined, and, within his means, gave freely to those less fortunate than himself, though of his beneficence he said nothing, preferring that it should remain unknown.

He was calm of manner and temperate of speech, and kept his temper under excellent control. He found his everyday vocabulary sufficient for all his needs, and never indulged in oaths or expletives of any sort.

He was singularly abstemious, drank neither tea nor coffee, and scarcely knew the taste of wine or other alcoholic liquor. Yet he never inveighed against their moderate use by others.

Brewster was sociably inclined and greatly loved the companionship of true and tried friends. His sympathies were broad and included an appreciation of and interest in the work and affairs of others, especially of young men, who never sought him for aid and counsel in vain.

He possessed the judicial temperament and in his anxiety to be just and make no mistake was sometimes long in making up his mind. Once convinced, however, of the righteousness of a cause, he never after wavered but upheld it with heart and soul and without fear of consequences.

He was absolutely truthful, habitually refrained from all exaggeration, and falsehood and evasion were foreign to his nature. As he was sincere and truthful, so was he honorable and pure minded, and his conversation reflected the thoughts and imaginings of a pure soul. Of him, if of any man, may we say, "blessed are the pure of heart for they shall see God."

The Ontario, Washington, D. C.

WILLIAM BREWSTER — AN APPRECIATION.

BY JOHN GEORGE GEHRING.

To appear before this body of Nature Lovers in an attempt to pay loving tribute to the memory of such a man as William Brewster, many of you having had your own relations of intimate friendship with him for years and some from boyhood, might seem like an intrusion under ordinary circumstances; but the circumstances are not ordinary when it is William Brewster of whom I speak! We all knew him to be a man of a wonderfully rich and many-sided character,— and we all know that to merely say how we loved him and shall always revere him, does not lift the weight of an irreparable calamity that has befallen us. Nevertheless it seems imperative as well as a precious privilege that I, at his own request, may be permitted, through your Journal, to give expression to what lies in my own heart.

On the eleventh day of last July William Brewster breathed out his last earthly hour in his tree-embowered chamber in his home in Cambridge. During the last weeks of his final illness it was my great privilege to be many hours by his side, to listen to his words, to return the glances of his friendly and trusting eyes, and to minister to him with such little attentions as one who loves his dearest friend, whom he is about to lose out of his earthly life, eagerly desires to bestow.

Through all those swiftly passing days the voices of his beloved birds came through the open windows of his chamber, and spoke to him through the ever-receptive senses of his bird-loving soul. Almost to the last conscious hour the notes of the robins never failed to elicit a recognition or some sign of pleasure. Indeed, to the sympathetic few who hovered around him, even after he had ceased to be perceptive of the environment of the room and his friends, it seemed that there still remained open the door that led to his love for the birds, for he ever appeared to be conscious of their movements and their notes, and often his countenance would faintly lighten with the recognition of their calls after he had become too feeble to utter words.

Lover of birds and animals and flowers,— and equally lover of his kind,— a rare and singularly beautiful soul was William Brewster, and a priceless privilege it was to be permitted to count him as a friend. A man wonderfully modest for one endowed with so great a store of Nature's lore, and unusually shy and timid in the imparting of the seemingly inexhaustible knowledge he so richly possessed. A man who won all hearts that came under the spell of his voice and presence or upon whom his eyes rested with their message of friendly understanding. "Who is your friend with the kind eyes?" asked of me not infrequently by friends who saw us together, was no unworthy tribute to this man who had the power to make friends by virtue of some subtle innate quality that directly appealed to those fortunate enough to meet him.

William Brewster did not need to commune with his friends in words. His was the rare gift of intuitive communion, and to be in his presence was to those who knew him best the privilege of interpreting a common thought by means of that rarer sense which is far more subtle than anything the clumsy medium of words could convey. What was this potent charm possessed in such marvelous degree by this dead friend of ours? Why were we compelled to love him,— what drew us to him with a feeling of tenderness akin the love of woman,— why did we give our implicit trust as though it were a matter beyond question that we should uncover our hearts to this unassuming man? Was it not that William Brewster was one of those men whose innate honesty and sincerity of soul spoke for itself in every act, in every thought he uttered,— that his relations with his fellow men were of the simplest and most direct,— that he had no guile and no distrust,— but interpreted all others by the light of his own transparent soul and heart and imputed to others only that which was mirrored in his own nature?

His was a character beautifully free from every taint of coarseness. His heart and soul shone through eyes as pure as those of a child. His conversation dealt with things that were beautiful and his soul loved the beauty that is portrayed in Nature with a life-long and all-embracing passion. To be in his companionship was to be at once lifted away from all that had little worth and to dwell upon the beauty and wonder of things that endure. Whoever of his friends had the opportunity of seeing and hearing William Brewster

deal and talk with a woodsman, guide or any of the simpler folk in the humbler walks of life with whom he came in contact during the many years wherein he studied birds in their haunts, but felt the charm with which he made that man feel at ease and upon a level of common manhood. And indeed, this was not manner in the least,—it was but simple sincerity.

From all men did he feel that he could learn, all men did he respect, and with all men did he feel as man to man. It was instantly apparent that he was one who took for granted the common manhood between them and who therefor brought out from them only that which was fine and true. The mere mention that one was a friend of his was to open the way to their hearts, and the claim of his friendship anywhere was a title to respectful recognition. What could we more earnestly desire for ourselves than that our own names might be as touchingly inscribed upon the hearts of our fellows as this of our dead friend, who without knowing it, simply because of inherent human kindliness, enveloped himself in an atmosphere of graciousness and good will!

As his old-time physician as well as friend, I had watched with growing solicitude a condition of gradual but increasing disability for a period of over two years. The insidious disease, as yet unconquered by Science, which brought his earthly life to a close, made the outlook increasingly hopeless. As he sought help from various sources he bore with wonderful docility and patience the failure to receive relief. He clung to every alleviation as to a buoy by which his courage might be upheld, until there came a day and an hour which can never be forgotten, when from lips that loved him came the answer to those gravely questioning eyes! He bore the message bravely, though he longed to live. Then to the one for so many years nearest his life, he tenderly spoke of happy years, leaving messages with her for dear and intimate friends, and affectionately thanked the faithful attendant who had ministered to his comfort. It will suffice to say that with a calm and simple resignation, with the dignity of soul that was his when in the midst of strength and the abundance of life, William Brewster accepted the inevitable, and his last days were mercifully veiled by unconsciousness as he drew near to the portal of the Great Unknown.

William Brewster had the Listening Soul! Of all things did he

receive testimony and to all things did he accord a hearing that was fair and just. He hastened to no conclusions and he was ever ready to modify his opinions in the light of farther evidence. His was a nature innately fair and truthful and whilst ever fearlessly uncompromising wherever principle was involved, personally he judged not at all! To be as broadly tolerant as this our loved and honored friend, to be as considerate and fair, as intrinsically friendly towards the opinion of all men, regardless of station, has been an ideal to us all since first we knew him.

O thou lover of all things true and good, upon what far heights today thy soul doth stand, we rest assured that one so fitted to be immortal,— has found his immortality!

Bethel, Me.

WILLIAM BREWSTER.

At a regular meeting of the Nuttall Ornithological Club held November 3, 1919, the following memorial of Mr. William Brewster was adopted by the Club for entrance in the Records, and the Secretary was instructed to communicate it to 'The Auk' for publication. It was prepared by Mr. E. B. White.

William Brewster was one of the founders of the Nuttall Ornithological Club and its President for over forty years, and when not absent from Cambridge, was found faithfully in the Chair at its meetings. His scientific attainments have made their own permanent record, but the Club wishes to record here the sense of the heavy loss it has sustained and of the intimate personal bereavement which the members suffer in the death of one who was held by them in such affectionate regard.

He presided with an easy control, with no trace of self-assertiveness, his poise rendering that unnecessary: perfect balance marked his character; he possessed vigor without asperity and sensibility without softness. Tolerant and just, he infused into the meetings

a feeling of mutual consideration, and that without any sacrifice of effectiveness, and at the same time his kindliness and his urbanity created a feeling of fellowship that rendered the gatherings peculiarly pleasant. Debatable matters he directed with a notable sense of fair play that assured full hearing for all sides; ornithological discussion he conducted with patience and acumen. He gave consideration to any observations, desirous that all who were present should participate in proceedings; and he listened to a contributor of even the most trivial notes with an absorbed, respectful interest. His sympathetic responsiveness and enthusiasm were sources of inspiration to many a younger ornithologist. We, who have for many years enjoyed his conduct of the meetings, carry ineffaceable in our mind his handsome, mobile countenance, which would light up some remark with an engaging smile of appreciative humor, or enforce some searching question with a piercing glance.

The fact that Mr. Brewster was never ruffled sprang from goodness of heart and lack of self-consciousness. He seemed gratified by opportunities to be helpful, and generously gave counsel and information to friends and strangers alike. Wide knowledge he seemed to hold in trust; and personal detachment made his decisions worthy of confidence. Very naturally, then, he was constantly consulted.

Great was the importance to the Club of the ready information which extensive experience and tenacious memory enabled him to supply off-hand. Even greater, because rarer, was the importance to it of the spirit with which he imbued it. The meetings have been held for many years in his private museum and are remembered with delight which is measurably due to his gracious bearing; and no occasions are remembered as more significant than those — all too few — when he contributed the formal paper of the evening from the day-to-day entries in his journal. Even then was strikingly felt his gift of felicitous expression, for his style was not only a sound scientific medium but was elegant and vivacious, vibrant with the joy of his chosen pursuits.

William Brewster grew upon his friends by intimacy, for even the most intimate discovered no traits save such as increased their love and esteem.

THE WILLIAM BREWSTER MEMORIAL.

At the regular stated meeting of the American Ornithologists' Union, held in New York City, November 10, 1919, the following communication from friends and co-workers of William Brewster was received and the trust therein described was formally accepted by the Union. [Ed.]

The undersigned co-workers and friends of William Brewster, in recognition of the great service which for nearly half a century he rendered American ornithology, present to the American Ornithologists' Union, as Trustees, the sum of five thousand dollars to establish the "William Brewster Memorial."

The income of the Fund shall be used to defray the cost of a gold medal, to be known as the Brewster Memorial Medal, to be awarded every two years to the author of what, in the judgment of the Council of the Union, is the most important work relating, in whole or in part, to the birds of the Western Hemisphere, during the period in question. The remainder of the accrued income of the Fund, after defraying the cost of the medal, shall be given to the recipient of the medal as an honorarium.

In case the award is made for the joint work of two or more persons, to each of whom credit is due in equal share, a medal shall be given to each of them and the honorarium shall be divided equally between them.

In case the Council decide that no work has been produced that is of sufficiently high scientific quality to be worthy of award of the medal, the income accrued during the period shall be added to the principal of the Fund.

In case at any future time it becomes the opinion of two-thirds of the members of the Council of the Union, that an amendment of the terms of this deed of gift would result in the better attainment of the fundamental purposes of the Memorial — which are the perpetual honoring of the memory of William Brewster, and the encouragement of study of American birds by the bestowal at intervals of a medal and honorarium as recognition of ornithological research of high scientific quality — such amendment may

be made by the same methods then in force for the amendment of the By-Laws of the Union, but in no other way.

All details of the administration of this fund shall be wholly under the control of the Council of the Union, any provision of the By-laws of the Union to the contrary notwithstanding.

A sketch for the proposed William Brewster Medal has been designed and contributed by Daniel Chester French, which is acceptable to Mrs. Brewster and to us, and we trust will meet with the approval of the Council.

It is recommended that the award be made at the meeting of the A. O. U., at intervals of two years, the two-year period to end June 30 preceding the A. O. U. meeting of that year, the first award being made at the meeting of 1921.

It is recommended that the President of the Union shall appoint a committee, of three persons, to recommend the award of the medal and honorarium. This appointment to be made during the first week in July preceding the A. O. U. meeting at which the award is to be made. The report of this committee will be presented to the Council at its Stated Meeting for acceptance or rejection. In the event of its rejection the Council shall have power to make the award.

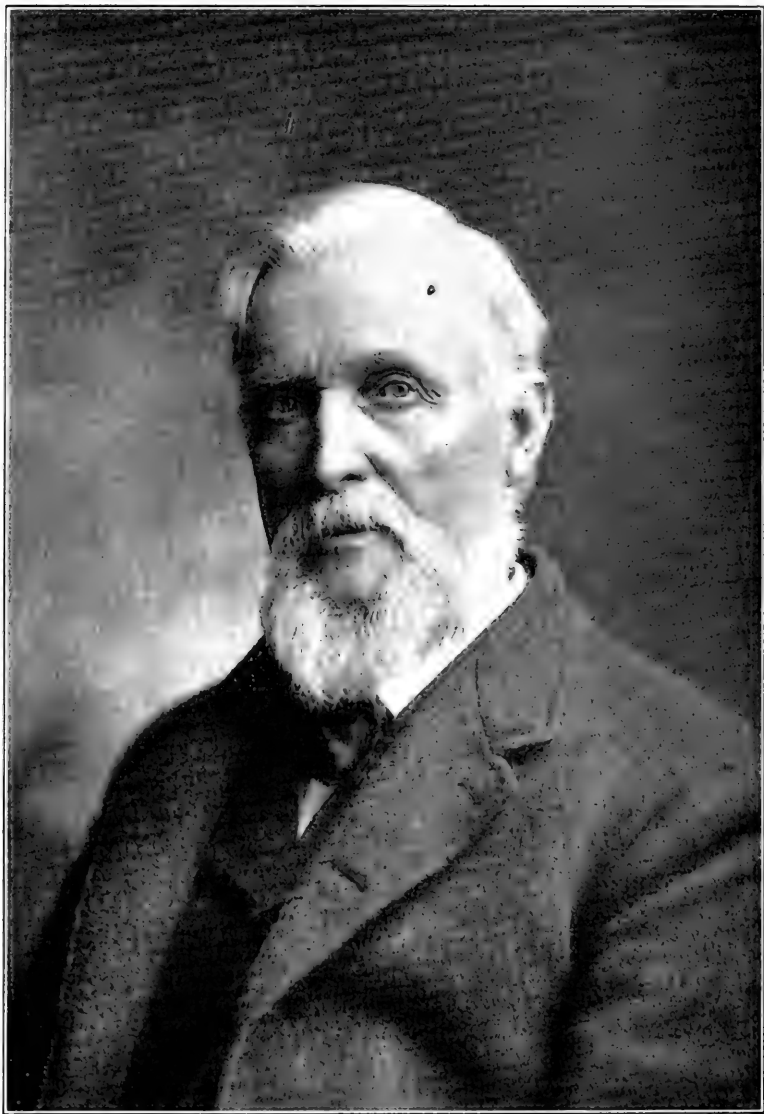
Having stated the general understanding under which the fund for the William Brewster Memorial was raised, we feel confident that we may leave the formulation of the additional details under which it may be administered to the good judgment of the Council of the Union.

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Natl. Asso. of Aud. Soc.	Riddle, S. Earle	Trotter, William H.
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Lyman Hilditch

IN MEMORIAM: LYMAN BELDING.

BY A. K. FISHER.

Plate III.

LYMAN BELDING, the Nestor of California ornithologists, died at his home in Stockton, California, at an early hour on the morning of November 22, 1917, at the age of eighty-eight years and five months. Death came as the result of general weakening of the system, the failing of strength and vitality due to the inroads of advanced age. The yellowing of the leaf, as he would say, advanced to a point wherein the stem no longer kept its hold on the tree of life. At the time of his death he was the oldest ornithologist in America and, with a few exceptions, in the world.

It was shortly after Mr. Belding took charge of collecting data on bird migration in the district comprising the Pacific coast States for the committee of the American Ornithologists' Union, in 1883, that the writer, also a member of the committee, first corresponded with him. Eight years later, in September, 1891, after the Death Valley Expedition, sent out by the Biological Survey to study life in the deserts of Nevada and California, had disbanded, the two met in San Francisco, and there started a long and endearing friendship.

The first impression of Mr. Belding was that of a man of reserve tinged with diffidence; but with the mellowing effect of congenial companionship, this quiet, unassuming gentleman without effort entertained his hearers on widely varied subjects of travel, natural history, adventure, music, sports with rod and gun, and the general affairs of State and current events. With this well rounded equipment, coupled with his genial and lovable nature, there is little wonder that he was so popular and so eagerly sought after by old and young, especially when found in the outing season in his favorite haunts in the Sierras. It always has been a source of much regret to the writer that circumstances prevented him from joining Mr. Belding in his mountain rambling during the period when he was still active with rod and gun.

In the past decade we have met almost yearly for a friendly visit and an interchange of ideas and opinions. Formerly, while still able to travel with comparative comfort, he would come to some mutually convenient point, but during the last five years of his life, owing to increasing infirmities, all meetings were held at his Stockton home. On various occasions he talked of his early travels and adventures, and told of many interesting things which had occurred in his experiences from whaling in the Arctic to trout fishing in the Sierras. Realizing that much of this necessarily disconnected narrative was of permanent value, he was induced after some effort to prepare an autobiographical sketch for the entertainment of the writer.

Fortunately this sketch, comprising nearly fifty typewritten pages of legal cap, was completed a couple of years before his death and before eye weakness forbade any literary effort. Notes from this sketch are the basis of this paper and of one prepared by Dr. Walter K. Fisher and published in 'The Condor' for March, 1918. There is little doubt that the stimulative effect of preparing this autobiography, with the necessary delving into the past, was a pleasing diversion for, with the exception of a daily game of whist with a coterie of old friends and an occasional visit to a moving picture theater, there was little to break the monotony of his daily routine, which was of the simplest kind.

Lyman Belding, son of Joshua Belding and Rosetta (Cooley) Belding, was born June 12, 1829, at West Farms, Massachusetts, on the west bank of the Connecticut River, not far from Northampton. From the windows of his home he had a plain view of Amherst College, Mount Tom, Mount Holyoke, and other interesting points. The homely charms of the New England landscape made a deep and lasting impression upon his youthful mind, as shown in later years by comparisons which he liked to draw between them and those of distant lands.

When he was about seven years old, his family moved to Kingston, Wyoming Valley, Pennsylvania. Here, amid mountains and valleys well timbered with deciduous trees, he developed his fondness for hunting, which with him as with many of us, proved to be the forerunner of his ornithological career. The following are his words: "My happiest days were in autumn. The Passenger

Pigeon was very common and its ete-tete-tete, as it rattled down the acorns upon which it was feeding was delicious music to me. I have seen many millions of pigeons in a single day in spring, when, after their usual northern migration, they were driven back by a cold storm. One morning early I was on Ross Hill near Kingston looking for a deer, the tracks of which I had seen in the snow the previous day. Soon after the sun appeared, millions and millions of pigeons flew south over the valley. The flight continued into the afternoon when patches of bare ground began to appear, affording feeding places for the birds. When driven south by cold spring storms the north branch of the Susquehanna River was a favorite route of travel.

“Before I got a gun I often wandered in the woods, sometimes getting home late in the evening, and on one occasion my parents thinking me lost had looked in an open well and other places for me. When I obtained a gun I was out early and late with it, and neglected school, though I worked faithfully on our farm when the crops needed me, except in the autumn when I would occasionally steal away and go to the hills for chestnuts.” This love of shooting and of life in the woods and fields endured to the end.

He went to Stockton in March, 1856, and of game seen here and in other parts of California he says: “Game was abundant, including elk, antelope, deer, bear, otter, quail, and waterfowl. Elk have disappeared from the interior valleys of the State excepting a drove on the Miller and Lux Ranch of forty thousand acres in the San Joaquin Valley, and these animals are being captured and distributed to various parks. The elk of this State inhabited the tule marshes mainly, though I have seen many elk horns in the Marysville Buttes, probably left there by elk which came from the marshes of Butte Creek, and I have seen hundreds, if not thousands, of elk horns on the border of the tule swamps north of Stockton. Antelope have entirely disappeared from the Sacramento and San Joaquin Valleys. I saw three in the latter valley a few miles west of Princeton in the summer of 1870 and a single one in Lower California about twenty-five miles south of Tia Juana in the spring of 1887. Deer were mostly in the mountains, with a few along the rivers where there were extensive thickets on bottom lands. They will continue to be common with proper protection. Very

little of their range will ever be cultivated owing to great altitude and soil that is not suited to cereals — I refer mostly to the Sierra Nevadas. I have seen only a few bears in the forest, probably about twenty, and only one undoubted grizzly bear. This I saw in the summer of 1875 when I was fishing on San Antonio Creek near the Calaveras Grove of sequoias. It crossed the stream below and near me and I had a good view of it. The owner of a drove of sheep that ranged in the vicinity told me that he had also seen it. I have been very near many bears but they would slip away unseen. Several of those I saw was when I was in the saddle. The only one I ever shot at was between the middle fork of the Stanislaus River and Beaver Creek, when I had two wire cartridges in my shotgun. My horse wheeled when I shot and the bear ran in the opposite direction to a dense thicket which I did not enter.

“While I was collecting specimens at Crockers, I tried to get a shot at a large bear feeding in a meadow on a plant growing on the border of a rivulet. He had not seen me, and I went to the edge of the meadow, put buck shot in my gun and waited for him to turn to give me a shot. He was a very large bear and the nearer he came to me, the more I realized his size. I had much time to think as he came slowly toward me, and I remembered the only two buck-shot shells I had were not to be relied on as they were old, and I concluded not to shoot at him. When he was about fifty yards from me, he must have smelled me as he turned broadside, sank back on his haunches, held one paw out, cocked his ears forward and sniffed several times. I was greatly relieved when he leisurely walked off toward the river.

“Beaver and otter were plentiful in the sloughs and tule marsh about Stockton. Beaver built houses on the marshes as the muskrats do on the marshes in the prairies of the Middle West. There were several of these beaver houses within three miles of Stockton. They were on land that floated, as much of the peat land does in the tule swamps about Stockton. I shot seven beaver in one day in the flood of 1861 and 1862. I would jar the houses and watch for the cautious appearance of the occupants as they came out to ascertain the cause of the disturbance. They would approach under water to within a few feet of me, just as I had often seen muskrats do when I was a boy, and the only evidence of their presence would be a little circular wave caused by their breathing,

with only the tip of their noses even with the surface of the water. The beaver about Marysville burrowed in the banks of the rivers. Beaver and otter became scarce long ago.

"I went to Marysville to reside early in October, 1862. Small game was abundant. Myriads of ducks and geese came from the north and east of the Sierras in October and November. Butte Creek attracted most of them. The Wood Duck was very common on Feather River and was a constant resident. It is now, as in the country generally, quite rare. The Mountain Plover appeared abundantly on the plains in October. At present it is apparently on the verge of extinction. There were a few deer along Feather River below Marysville and a few in the Marysville Buttes. Mountain Quail came down from the mountains near Oroville and other localities on the eastern border of the valley to spend the winter."

In the autumn of 1849, Mr. Belding nearly succumbed to an attack of typhoid fever, and during a tedious convalescence was still further weakened by malarial fever. On account of his debilitated condition due to these complications his doctor advised a sea voyage to hasten recovery.

After spending nine months with a sister, at Baltimore, Maryland, to partially regain his strength, he sailed for Boston and arrived about July, 1851. He then went to New Bedford and after a few days shipped on the 'Uncas,' which was going to the Arctic for bowhead whales. This voyage lasted three and a half years. The 'Uncas' arrived at the Azores (about three weeks' voyage from New Bedford), and visited Flores and St. Michael for the purpose of completing the crew. The vessel touched at Cape of Good Hope, St. Paul, Amsterdam Island, New Zealand and Guam, and reached Bering Straits in July, 1852. During the cruise in the Arctic the vessel went north to the 73rd parallel and was successful in securing a full cargo of oil from bowhead whales. When the sun went below the horizon the ship turned south on her homeward journey. A stop was made at Petropavlovsk, a Russian penal colony, for water and the purchase of furs. On arrival at Honolulu, 150 whaling vessels were found anchored there, the greater number of which had been in the Arctic at the same time as the 'Uncas.'

On account of unbearable treatment at the hands of the Captain

of the 'Uncas,' Mr. Belding deserted from the vessel and, after many unpleasant experiences, shipped in the 'Julian,' of Martha's Vineyard, which visited the Cocos Islands, and the Galapagos group for sperm whales. The ship returned to Honolulu in four months with a cargo of oil. In the spring of 1853 he shipped on the bark 'Philomela,' of Portland, which he designated as an old tub, and finally reached home January, 1854.

There is no question that from the time he was a small boy, Mr. Belding took a great interest in birds, especially in their native haunts. In confirmation of this he says: "My love of adventure as well as my admiration of birds was responsible for most of my wanderings. Bird songs always had a great attraction for me and I copied many songs that had regular intervals and could be expressed by our musical system."

It was not until 1876, when he received a volume of Cooper's 'Ornithology of California,' that his slumbering interest burst forth and his activity as an ornithologist began. This stimulus, coupled with the kindly interest and patient assistance of Prof. Baird and Mr. Ridgway, two men who have helped many a bewildered and discouraged beginner over the rough places in ornithology, started him on his collecting career. He often expressed his gratitude for their kind attention and avowed that his zeal for his work was greatly increased by their combined encouragement. Prof. Baird sent him many valuable books and Mr. Ridgway was most patient and prompt in writing him long, interesting letters concerning specimens he had sent to the Smithsonian Institution for identification.

His success in identifying specimens was due partly to his already good knowledge of birds, partly to the excellence of Prof. Baird's descriptions in the 'Ornithology of California,' and in Volume IX of the 'Pacific Railway Reports,' and partly because "north-light subspecies" as yet were not in vogue. He found more pleasure in identifying strange birds than anything else, except, perhaps, in collecting material in the Sierra Nevada. He never went out on a collecting trip, especially on a long one, without taking some of his most needed books, and "volume IX" was always one of them.

In the spring of 1881, Prof. Baird and Mr. Ridgway requested him to visit Guadalupe Island. Accordingly he went to San Diego

to prepare for the trip, but reluctantly gave up the voyage after meeting several sealers back from the island who told him of the withdrawal of the Mexican garrison and of the general unsatisfactory condition there.

He then went to the Cerros Island, the second objective, but it was found quite destitute of birds. After a stay of twelve days he went to Scammons Lagoon for the purpose of collecting on the mainland, but the surf was so dangerous he did not try to land. It was here that A. W. Anthony's schooner was wrecked in 1898.

From this point Mr. Belding followed the coast northward, stopping at Santa Rosalia and San Quentin Bays. It was a long distance from anchorage at the mouth of the Bay to the collecting grounds, so that the results were disappointing to Mr. Belding. On this trip he collected specimens of a cormorant which later was named the lesser white crested cormorant (*Phalacrocorax a. albociliatus*) besides a new lizard or two on Cerros Island, and during the latter part of the voyage secured a specimen of the then undescribed Frazer's Oystercatcher (*Hæmatopus frazeri*). At San Quénitin Bay he first secured a specimen of the bird that Mr. Ridgway later named *Passerculus beldingi*, in his honor.

The winters of 1881-82 and 1882-83 found him in the Cape region of Lower California where he collected from La Paz to Cape San Lucas, excepting December, 1882, and a part of April, 1883, when he was at Guaymas. He enjoyed collecting in the Cape region, though he endured severe hardships due to the scarcity of water in that semi-desert area.

He considered that he had made the mistake on the first trip, of collecting too great a variety of things of which he knew little or nothing, instead of confining his energies entirely to birds, thus making a second trip unnecessary. In 1881, he took two nests and eggs of Costa's Hummingbird at La Paz, the first eggs of the species ever taken. He found San Jose del Cabo the best field in the low country, and the Victoria Mountains the best in the higher parts. He wondered why the sharp-eyed Xantus had not discovered *Geothlypis beldingi* along the San Jose River where he spent much time, and he doubted whether he was ever in the Victoria Mountains, or he would have found *Junco bairdi* and other common birds of the region.

On his second trip, Mr. Belding took only about eighty bird skins for he did not wish many. He consumed nearly a week of time in securing two specimens of *Rallus beldingi*. He only heard of one man at La Paz who had ever seen one, and several hunters were surprised when he showed them one of the birds. These birds inhabit the mangrove thickets, and both specimens were obtained at low tide while in search of food.

Mr. Belding travelled considerably in the northern part of Lower California, and on one of the trips, in May, 1885, collected a specimen of *Sitta pygmaea leuconucha* which he presented to the National Museum several years before it was described elsewhere.

His keen perception caused him to realize at about this time that it would be almost hopeless to continue the study of ornithology with the idea of mastering the subject, unless there were available in California a very complete collection of birds for use in comparison. With the idea of building up such a collection he wrote to many of his California correspondents and advised them to send skins to the California Academy, which he believed to be the proper place for such a collection. The lack of enthusiasm on their part to contribute toward the enterprise and the increasing tendency toward the multiplication of poorly defined subspecies undoubtedly were important factors in discouraging further collecting. He was very quick to notice differences in plumage and proportions but was little interested in specimens that could only be identified when compared with large series and when the locality and date of capture of the specimen had to be known.

It was most unfortunate that he did not come in personal contact with many of the young ornithologists who now are doing such creditable work in the State. Being fond of the companionship of young people it is certain that mutual profit and pleasure would have come from association between this noble gentleman and the young and enthusiastic ornithologists of California.

The forests, streams, and meadows of the Sierras were his special delight and after advancing age made it more and more difficult to travel as each year rolled by, he dreamed of the by-gone days and was resigned.

Of these mountain playgrounds of his, we may quote from an article of his in 'The Condor'; (Vol. II, p. 4, 1900) as follows:

"The pleasantest days I have spent since 1876 have been in the mountains of Central California. Since that time I have been in these mountains the most of each summer. I couple deer, grouse and quail hunting with bird study. At first I tried to connect botany with ornithology, but I could not look on the ground for plants and in the trees for birds at the same time. The ornithologist should, however, know the prominent plants at least. During my rambles I have noticed the hardness of some of our mountain annual plants. I have seen the mercury down to 22 degrees on two successive mornings and no trace of frost afterward, except that a few of the tenderest ferns were killed. I suppose this may be owing to dry air and cool nights, the latter preventing the rapid growth and consequent tenderness of kindred plants grown where both days and nights are warm.

"The first eggs I collected were about on a par with my first bird skins. I picked a hole in each end with a pin, never having seen or heard of egg drills and blow-pipes. Eggs of Townsend's Solitaire and others quite as choice were thus punctured. I believe I took the first eggs of the Solitaire, which were sent to the National Museum. The nest is composed almost wholly of pine needles and can readily be distinguished from any other nest of the Sierras. It is usually on the ground, but I have seen one in a hole in a stump about a foot from the ground. Perhaps there is no part of the world more interesting than the high Sierras of Central California. Neither Heermann, Gambel, or Xantus explored them. Mr. Bell got the Round-headed Woodpecker in Calaveras or Tuolumne county, but this he could have done at an altitude of 2500 feet or less in winter. Prior to 1876 these mountains had hardly been touched by the ornithologist, the route immediately along the Central Pacific Railroad and about Lake Tahoe being the only part that had been visited. Considerable work had been done south of Tehachapi; Newberry had followed the Sacramento River to the Klamath Lakes and northward, and Capt. Feilner had collected at Fort Crook and about Mount Shasta, but the mountains in the central part of the State had been neglected.

"If any of the young ornithologists of this State have not visited these mountains in summer they should miss no opportunity to do so. My most interesting observations have been those of evenings

and moonlight nights in some secluded part of the forest where large game was abundant. I have often heard the Pygmy Owl, which Mr. Ridgway correctly says is diurnal and crepuscular and have quite as often heard the Flammulated Owl, which is strictly nocturnal and hard to get. I have only taken one specimen. The Western Barred Owl has never ceased to interest me, for it is quite familiar and seems to have a fondness for *talking back!* By imitating its shrieks and dog-like barkings, I seldom fail to get a response."

Mr. Belding being preëminently a field ornithologist and primarily interested in birds in their native haunts accounts in part for the disparity between the work he accomplished and the amount of material published. One of his earliest and longest papers appeared in the 'Proceedings of the National Museum' in 1879, entitled 'A Partial List of the Birds of Central California' and included observations made in the Sacramento and San Joaquin Valleys from Marysville to Stockton and on the western slopes of the Sierras. It covered sixty one pages and included annotated notes on 220 species.

'The Birds of the Pacific District,' appearing in 1890 as one of the series of 'Occasional Papers' of the California Academy of Science, was one of Mr. Belding's best-known, and most important publications. It was based on material from California, Oregon, Washington, and Nevada furnished by migration observers of the American Ornithologists' Union. Although many observers furnished data, a very important part of the work was contributed by Mr. Belding himself. His intimate knowledge of the region and his well-known accuracy make this volume one of the standard publications relating to the birds of the Pacific Coast. The manuscript, which contains much material not in the published volume and a similar report on the waterfowl which was never published, are deposited in the Bancroft Library of the University of California.

It is only logical that a man who had collected so much zoölogical material, over wide and little-known regions, would have species dedicated to him, and we find five birds and four other vertebrates named after Belding.

When the American Ornithologists' Union was founded in 1883,

Mr. Belding was elected an Active Member and remained as such until 1911, when at his own request he was made a Retired Fellow. He was elected a member of the California Academy of Sciences, March 4, 1889, life member March 4, 1914, and honorary member of the section of ornithology of that institution, February 7, 1898. He became an honorary member of the Cooper Ornithological Club in 1896. He took a keen interest in these three societies and gave them his warm and substantial support.

About 1867 he married the widow of his brother, and a daughter, Josephine M., was born to them. She inherited the tastes of her father, being interested in music, birds, flowers, and all out-of-door life. Her fine nature made her a favorite among relatives and associates. She died January 24, 1917, ten months before her father passed away.

To many of the younger ornithologists Lyman Belding, because of his early retirement from active ornithology, is a name and an inspiration only, but to the older men, especially those who have been favored by his friendship and close association with him, his death brings sorrow. This sadness and feeling of loss, however, will gradually fade away and be replaced by fond memories of a departed friend, a stalwart citizen, an ardent sportsman and a nature lover.

His remains rest peacefully in the Rural Cemetery at Stockton, his old home, where much of his active life was spent.

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U. S. Biological Survey, Washington, D. C.

MIDSUMMER BIRDS IN THE CATSKILL MOUNTAINS.

BY STANLEY COBB, M.D.

ONE hundred miles north of New York City the Catskill Mountains rise from the west shore of the Hudson River making a circular uplift some 100 square miles in area. Near the little hamlet of Hardenburg on the Beaverkill stream I have spent the first part of July for several years. The altitude in this locality is from 2000 feet in the valleys to 3,800 feet at the summits of the round topped, but steep mountains which are covered with a dense second growth of hardwood succeeding the hemlock forest of sixty years ago. Remnants of these magnificent hemlocks can still be seen all through the woods, for when they were cut their bark was stripped off for the tanneries and the great trunks still lie rotting and moss covered in the damp shade, while the stumps — many of them three or four feet across — stand in the twilight of the forest among the slender second growth like mossy tombstones commemorating man's wastefulness. Add to this forest land a quantity of lively mountain brooks, many old clearings with ruined houses and decaying orchards, and occasional rough farms with sunny hillside pastures, and you have an ideal place for birds, especially warblers, finches, and thrushes.

The most abundant bird in this locality, and the one which always seems to me typical of the old wood roads is the Slate-colored Junco. Here is his summer home, and along the "dug-ways" where the roads are cut into the hillsides, making steep fern covered and mossy banks, their nests are easily found. In one stretch of a half mile of road I have found as many as four, all in similar positions — under some root or fern clump in hollows dug into the little perpendicular banks. In the first week of July most of the nests contained 4 eggs each, but by the twelfth they were nearly all hatched and offered excellent subjects for photography. It was not necessary to hide the camera for in less than an hour the mother bird would become so accustomed to it that she would feed her young within 24 inches of the shining lens without apparent fear. The

darkness of the wood roads and the quick actions of the birds, however, made it hard to get good results without the best of lenses, so my efforts with an ordinary stock camera were not very satisfactory.

The other finches of the mountains were more conspicuous if less confiding, for the beautiful members of the family, such as the Indigo Bunting, Rose-breasted Grosbeak and Purple Finch, were abundant. At home in Massachusetts I have always thought of the Rose-breast as a comparatively uncommon and shy bird, but in these beech woods it was one of the commonest birds. Every morning and evening their liquid song was a delight, and throughout the day the males flashed from tree to tree eating the canker worms which had nearly defoliated parts of the forest.

Indigo Buntings frequented the clearings and old farm lands, nesting plentifully in the underbrush just where the stumpy fields merge into the deep woods. In one such place I found three of their nests within fifty yards of each other. At this season they seemed to be raising their second brood for one of the nests contained new laid eggs, while there were many young around just able to fly with ease.

While speaking of brilliant birds mention must be made of the Scarlet Tanagers which were even more abundant than the Grosbeaks in the worm infested patches of beech woods. In these bare trees their plumage showed off marvelously, and their throaty "chuck-wheel" and pleasing song might be heard at all hours of the day.

Flycatchers, too, were abundant; Kingbirds made the pastures lively with their quick sallies and noisy chatter; along the streams the Phœbes silently watched for insects; and from the swampy woods at noon came the drowsy call of the Wood Pewee or the incessant "chebec!" of the Least Flycatcher.

But the brightest charm of the Catskills for an ornithologist is in the number and variety of warblers. My first morning in the woods I saw eleven species, some of them the handsomest of the tribe. Among the few remaining hemlocks the Black and White, Myrtle, and Parula Warblers explored the lower branches, twittering and singing, while from the higher trees came the soft song of the Black-throated Green, or the insect-like call of the Black-

throated Blue, both very common. In the thickets along the streams or near the pastures, the Chestnut-sided Warblers nested, associated with the Redstarts and Maryland Yellow-throats. Where tall woods bordered the Beaverkill and the rocks were smooth from many freshets, the Blackburnian Warblers used to amuse us by trying to catch our flies as we fished for trout. They showed little fear and their flame colored throats were a constant pleasure.

Beside these abundant species there were two others of which I occasionally caught glimpses: the Mourning and Canadian Warblers. Both of these were rather shy and retiring, seldom singing, though I once heard the Canadian's song — a loud but sweet medley.

Yet when I have not mentioned the thrushes how can I give space to the many other birds which seem so typical of the Catskills? To the Winter Wren overflowing with song among the dark fallen hemlock trunks; the Black-billed Cuckoos gliding stealthily through the woods; the Chimney Swifts splashing onto the smooth surface of the lake at dusk; or the Red-tailed, and Red-shouldered Hawks drifting high over the mountains against the deep blue sky and sunny clouds.

And now the thrushes! During the day they seem like sedate quiet birds, flying shyly about the shady woods attending to their nests and young. The Wood Thrush is common on the high ground in tall open forest, and the Wilson Thrush or Veery is abundant in the fern floored swamps, while the Hermit prefers the vicinity of brooks and ponds, sometimes singing even at noon — softly, from some cool shade, as if he could not wait till evening.

But evening near Balsam Lake is the time for thrushes. As the shadows grow long and stretch down the mountain sides the thrushes begin to tune up, softly at first and at intervals, but as evening draws on the woods resound with most exquisite music, the true music of nature; not like the pleasant jingling songs of finches, or the soft trills of warblers, but strong, rich and mellow notes such as are heard from the sweetest of flutes. From the beech woods comes the slow chime-like song of the Wood Thrush, answered by others in different keys. In the swamps the Veeries join a rolling chorus, sending forth their liquid spirals of sound

in quick succession until the woods resound. And then the Hermits — from all sides their songs come, pure and bubbling, not slow and bell-like as the Wood Thrush nor fast and rolling like the Veery, but a perfect blending of bell tones and flute-like trills, soft or loud with the bird's varying mood. The dusk deepens, and the chorus increases till all the shadowy forest is echoing with deliciously clear music. Then, as darkness falls, they hush one by one; the sky fades over the western mountain; a Great Blue Heron flaps heavily up the lake and over the now silent forest, and far up the valley the "Whoo-hoo-hoo-ah!" of the Barred Owl floats down to us, mellowed by distance, telling that night has come.

340 Adams St., Milton, Mass.

NOTES ON THE WINTER BIRDS OF SAN ANTONIO, TEXAS.

BY LUDLOW GRISCOM.

FROM December 15, 1917, to March 7, 1918, the writer was stationed at Camp Stanley, Leon Springs, Bexar Co., Texas. As much spare time as possible was devoted to observing birds, particularly week-ends of course, but incidental work was possible throughout the week. The life was an absolutely outdoor one in unsettled country. Field glasses were always a proper part of an officer's uniform, and perhaps I received much more credit for zeal in examining the country for tactical problems than I deserved!

The vicinity of Camp Stanley itself was very poor for birds, the barren rocky hillsides with but scant growth upon them, satisfying the requirements of a very limited number of species. The San Antonio River south of the city was a much better place. Several trips were made to the Medina Dam about twenty-five miles to the west. The dam has made a lake over ten miles long by one-half mile wide, where waterfowl were abundant. The hills here were covered with juniper and bayberry, and the bird-life as a result differed markedly.

In 'The Auk,' for 1892, Attwater gave a list of the birds from the vicinity of San Antonio with mostly very brief and general annotations. A list of the breeding birds for all of Bexar Co. is given by Messrs. Quillin and Holleman in 'The Condor' for 1918. Lacey published a very complete list for the vicinity of Kerrville, about fifty miles northwest of San Antonio (Auk, 1911, p. 200), and Austin Paul Smith wrote 'Additions to the Avifauna of Kerr Co., Texas' in 'The Auk,' 1916. A few other short notes have been published, but those are not given as they do not bear on the birds in this article.¹

The chief excuse for publishing these notes is the discrepancy in the accounts of Attwater and Lacey as to the status of various species, where the difference in the kind of country and the fifty miles ought not to count. As this is usually due to the lack of adequate observation by a sufficient number of people at nearby contiguous stations, my notes are given as supplementary information. It is also, perhaps, worth while to record the effect upon the bird-life of the extreme severity of the winter of 1917-18, which a good many people both in and out of the military service, will remember for years to come. The number of military camps too must have interfered with bird-life, and undoubtedly aeroplanes were responsible for the scarcity of many species such as vultures and hawks. In the list which follows all actual or apparent discrepancies are pointed out, as well as new records. Even the commonest birds have been included, so as to give the future observer a definite idea of what he may expect to find.

1. **Podilymbus podiceps.** PIED-BILLED GREBE.—Two seen at Medina Dam, December 30, 1917. Not mentioned by Attwater as a winter resident. Called an occasional winter visitor on the Guadeloupe River by Lacey.

2. **Mergus serrator.** RED-BREASTED MERGANSER.—A flock of five noted at the Medina Dam, December 30. Another species not mentioned by Attwater, but called an occasional winter visitant by Lacey.

3. **Anas platyrhynchos.** MALLARD.—Rather uncommon on the

¹ The first paper dealing with the birds of this region is by H. E. Dresser and appeared in 'The Ibis' for August and October, 1865 and January, 1866. It is especially interesting historically as Mr. Dresser stopped with Dr. A. L. Heermann who was living at San Antonio at the time and who contributed a number of notes to the paper. [Ed.]

Medina Lake. Attwater calls all the ducks migrants, and Lacey calls them all winter residents, either occasional or not uncommon.

4. **Mareca americana.** BALDPATE.—A drake on Medina Lake with Mallards December 30. According to Attwater a migrant, according to Lacey not uncommon in winter.

5. **Nettion carolinense.** GREEN-WINGED TEAL.—The scarcest of the Anatinae on Medina Lake.

6. **Spatula clypeata.** SHOVELLER. Flock of six December 30 on Medina Lake.

7. **Dafila acuta.** PINTAIL.—The commonest of the Anatinae and the tamest. A stray bird seen January 13 on the San Antonio River south of the city at Hot Wells.

8. **Marila americana.** REDHEAD.—Common on Medina Lake. It is not recorded by Lacey, and Attwater calls it a migrant.

9. **Marila valisineria.** CANVASBACK.—In slightly greater numbers than the Redhead. Not recorded by Lacey. Attwater gives it as less common as a migrant than the last.

10. **Marila affinis.** LESSER SCAUP.—One drake seen January 6. A rare migrant (Attwater); not uncommon in winter (Lacey).

11. **Marila collaris.** RING-NECKED DUCK.—The commonest and tamest duck on Medina Lake. Not recorded by Lacey; a tolerably common migrant (Attwater).

12. **Clangula clangula americana.** WHISTLER.—This is one of the species the occurrence of which is probably due to the severe cold weather. Three drakes seen on January 6, at the extreme upper end of Medina Lake. Previously unrecorded.

13. **Ardea herodias** subsp.? GREAT BLUE HERON. One or two seen on each visit to the Dam. Not previously recorded in winter.

14. **Fulica americana.** COOT. Very abundant on Medina Lake. Not mentioned previously as occurring in winter.

15. **Oxyechus vociferus.** KILLDEER. A few birds in all types of country, their numbers apparently unaffected by the severe weather.

16. **Zenaidura macroura carolinensis.** MOURNING DOVE.—A few birds all winter.

17. **Scardafella inca.** INCA DOVE.—Not uncommon on the outskirts of San Antonio right through the winter. Attwater regarded it as very rare, giving only one record. All later writers agree in its being a common resident, so it must have extended its range northward. As it is extraordinarily tame and confiding, and a dooryard bird, it seems improbable that Attwater could have overlooked it.

18. **Cathartes aura septentrionalis.** TURKEY VULTURE.—Decidedly rare. A few birds seen in the city of San Antonio, and none after the cold wave of January 10.

19. **Catharista urubu.** BLACK VULTURE.—Decidedly uncommon, except at Medina Lake, where it was quite plentiful.

20. **Circus hudsonius.** MARSH HAWK.—A few birds seen in the flat country near San Antonio.

21. **Accipiter velox.** SHARP-SHINNED HAWK.—Only one bird seen.

22. **Buteo borealis** subsp.? RED-TAILED HAWK.—A pair at Leon Springs, and another at Medina Dam.

23. **Falco sparverius** subsp.? A few birds in all types of country.

24. **Polyborus cheriway.** AUDUBON'S CARACARA.—Attwater gives this species as a resident. In spite of this it was a shock to see one in nippy weather on December 29, looking very miserable and fluffed out. None seen later.

25. **Geococcyx californianus.** ROADRUNNER.—Given as a common resident by everybody, but I saw only one. Non-ornithological natives informed me that it had greatly decreased in the more settled country.

26. **Ceryle a. alcyon.** BELTED KINGFISHER.—Seen on each trip to the dam, and along the San Antonio River south of the city. Not given by Attwater as occurring in winter, but recorded by Lacey as a resident.

27. **Dryobates scalaris bairdi.** TEXAS WOODPECKER.—Fairly common.

28. **Sphyrapicus v. varius.** YELLOW-BELLIED SAPSUCKER.—The commonest woodpecker.

29. **Melanerpes f. formicivorus.** ANT-EATING WOODPECKER.—According to Lacey common in winter and breeds near Kerrville, the most eastern record. One bird seen December 15 at Camp Stanley, considerably to the southeast.

30. **Centurus aurifrons.** GOLDEN-FRONTED WOODPECKER.—Common along the San Antonio River south of the city. Almost indistinguishable in color, habits and notes from its eastern relative.

31. **Colaptes auratus** subsp.? FLICKER.—One positively identified at Camp Stanley December 27, and another at Hot Wells, January 1. According to Attwater regular in winter. Unrecorded by Lacey.

32. **Colaptes cafer collaris.** RED-SHAFTED FLICKER.—Common.

33. **Sayornis phoebe.** PHOEBE.—Common, and apparently unaffected by the cold weather. Present even at Camp Stanley, nowhere near any water.

34. **Molothrus ater** subsp.? COWBIRD.—A large flock of several hundred birds around the stables at Camp Stanley. Considered common in winter by Attwater and rare by Lacey.

35. **Agelaius phoeniceus** subsp.? RED-WINGED BLACKBIRD. In spite of previous writers only one bird seen with Cowbirds around the cavalry stables at Camp Stanley December 27. It could not be found later.

36. **Sturnella neglecta.** WESTERN MEADOWLARK.—Abundant, singing on warm days. In spite of careful effort I could not find the eastern bird. There is no difficulty in telling them apart, the notes are so diagnostic.

37. **Euphagus cyanocephalus.** BREWER'S BLACKBIRD.—Common. It seems curious that it is unrecorded from the vicinity of Kerrville, when

it is so common at Leon Springs, even farther east and in the same type of hilly country.

38. **Megaquiscalus major macrourus.** GREAT-TAILED GRACKLE.—A few in the city of San Antonio. Another species which violated previous experience in a warmer climate.

39. **Calcarius ornatus.** CHESTNUT-COLLARED LONGSPUR.—A flock of these birds appeared on the parade ground at Camp Stanley just after the severe cold wave of January 10. They were so tame that I could walk straight up to them within six feet before they would bother to flit to one side. As soon as the weather moderated they disappeared.

40. **Poœcetes gramineus confiris.** WESTERN VESPER SPARROW.—A common roadside bird in the flat country near San Antonio.

41. **Passerculus sandwichensis alaudinus.** WESTERN SAVANNAH SPARROW.—Same as the last.

42. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW.—Very common. The only species that increased after the cold weather, which does not agree with Lacey's experience.

43. **Zonotrichia querula.** HARRIS' SPARROW.—A few of these distinguished sparrows consorted with White-crowns at Camp Stanley, until the cold weather, when they disappeared.

44. **Zonotrichia l. leucophrys.** WHITE-CROWNED SPARROW.—The most abundant species until cold weather at Camp Stanley, but a few remained all winter. Common around San Antonio. Many birds were in full song on warm days throughout the winter.

45. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.—Two birds seen at Camp Stanley December 27. Lacey gives only one record for Kerrville, while Attwater calls it a common winter resident around San Antonio, though I could not find it there in ideal country. Smith also gives a winter record.

46. **Spizella passerina** subsp.? CHIPPING SPARROW.—A single bird seen with other sparrows on December 27 at Camp Stanley. Lacey calls the eastern bird common in winter, while Attwater only records the western form from San Antonio at the same season! The species did not winter at the Medina Dam, but was present March 6. They were found by following up a song which was quite unrecognizable, and I well recall my astonishment when the singers turned out to be Chipping Sparrows in spring plumage, so tame and confiding that it was impossible to make them any of the more desirable western species.

47. **Spizella pusilla (arenacea?)** FIELD SPARROW.—Common until the severe cold weather.

48. **Junco hyemalis** subsp? JUNCO.—Fairly common. Most emphatically not the eastern bird, although this form is the only one given. Judging by sight identification alone all birds seen were *montanus*. There was no difficulty in noticing the paler gray, the larger amount of white in the tail and the amount of pinkish on the sides. Even the notes seemed a little different.

49. **Amphispiza bilineata.** BLACK-THROATED SPARROW.—Scarce at Camp Stanley, disappearing with the first cold weather. Not noted anywhere else.

50. **Aimophila ruficeps eremœca.** ROCK SPARROW.—Another species which apparently disappeared after the cold weather.

51. **Melospiza melodia** subsp.? SONG SPARROW.—Rather uncommon, disappearing after the cold weather. According to Smith, the prevailing form is *juddi*. All I can say is that my birds looked a little "off color."

52. **Pipilo maculatus arcticus.** ARCTIC TOWHEE.—Common.

53. **Cardinalis cardinalis canicaudus.** GRAY-TAILED CARDINAL.—Common. The female is easily distinguishable in life from the eastern bird.

54. **Bombycilla cedrorum.** CEDAR WAXWING.—Abundant at Medina Dam; an occasional flock elsewhere.

55. **Lanius ludovicianus excubitorides.** WHITE-RUMPED SHRIKE.—Rather common.

56. **Vermivora c. celata.** ORANGE-CROWNED WARBLER.—A single bird seen January 1, south of San Antonio. Considered rare in winter by previous writers.

57. **Dendroica coronata.** MYRTLE WARBLER.—Common around San Antonio and the Medina Dam. Only one noted at Camp Stanley, where there is no suitable country.

58. **Anthus rubescens.** PIPIT.—Common until the cold weather, after which it was found at San Antonio only.

59. **Mimus polyglottos leucopterus.** WESTERN MOCKINGBIRD.—Common.

60. **Toxostoma c. curvirostre.** CURVE-BILLED THRASHER.—Two very tame and miserable looking birds seen at Medina Dam January 5. Although unrecorded by Attwater, Quillin and Holleman give it as a common summer resident. According to the A. O. U. 'Check-List,' there is no particular reason why the species should be in this part of Texas at all.

61. **Salpinctes obsoletus.** ROCK WREN.—Noted only at Medina Dam.

62. **Thryothorus l. ludovicianus.** CAROLINA WREN.—Common.

63. **Thryomanes bewicki (cryptus?).** TEXAS WREN.—Common.

64. **Nannus h. hyemalis.** WINTER WREN.—A single bird seen January 1 along the San Antonio River, south of the city. Apparently the only record.

65. **Bæolophus atricristatus sennetti.** Sennett's Titmouse.—Common.

66. **Penthestes carolinensis agilis.** PLUMBEOUS CHICKADEE.—This species did not appear until February 8. Early in March it was common along the San Antonio River.

67. **Regulus s. satrapa.** GOLDEN-CROWNED KINGLET.—A single bird seen January 1 near San Antonio. Lacey calls it uncommon in winter,

and Smith commoner than *calendula* in Kerr Co. Attwater calls it a common migrant at San Antonio.

68. ***Regulus c. calendula*.** RUBY-CROWNED KINGLET.—Common, except in the arid country around Camp Stanley where it was a surprise to see it at all.

69. ***Polioptila c. cærulea*.** BLUE-GRAY GNATCATCHER.—One bird noted January 1 at Hot Wells, south of San Antonio.

70. ***Hylocichla guttata*** subsp.? HERMIT THRUSH.—Rather common, except at Camp Stanley where it was absent.

71. ***Planesticus m. migratorius*.** ROBIN. Rather uncommon, except at Medina Dam, where it was abundant in the juniper and bayberry.

72. ***Sialia s. sialis*.** BLUEBIRD.—Not common except at Medina Dam.

73. ***Sialia currucoides*.** MOUNTAIN BLUEBIRD.—A species whose appearance in this region was probably due to cold weather. Three birds seen December 17, and a male with *sialis* December 27, both at Camp Stanley. Lacey recorded it in only three winters in twenty-nine years around Kerrville considerably farther north and west. It is apparently previously unrecorded near San Antonio.

Amer. Museum Nat. Hist., N. Y.

THE OCCULT SENSES IN BIRDS.¹

BY HERBERT H. BECK.

THAT animals below man, in the accepted biological line, have retained in efficient form much that has been greatly reduced or nearly lost in the process of developing Nature's master product — the human mind — is a fact of common knowledge. The senses of sight, smell and hearing in man are almost rudimentary when compared with the same senses as developed in the hawk, the setter dog, and the fox.

It is not so generally recognized, though none the less perhaps a fact, that certain senses widely or selectively a part of animal life, are absolutely gone in man. So thoroughly are these senses atrophied or lacking in the human mind that man with all his highly

¹ Presented before the Delaware Valley Ornithological Club.

developed imagination cannot even vaguely visualize the subtle processes by which they operate.

In bird life one of these occult senses, the homing sense, exists to a remarkable degree. The complex phenomena of migration, often over trackless regions, the homing acts of pigeons, and the speedy returns over unfamiliar sea courses of Sooty Terns taken a thousand miles from their nests, cannot adequately be explained on the basis of acuteness of vision or persistence of memory in the birds that make these wonderful flights. There apparently is something entirely apart from human consciousness or subconsciousness that holds the bird to a true course between widely separated points.

The homing sense is broadly, though somewhat selectively, distributed among animals. It is exhibited by many insects and by some mammals. It only finds its greatest development in birds.

Nor is there anything supernatural about this seemingly occult faculty. It probably is only a common trait of animal life strongly carried through in certain groups. A highly efficient homing sense is but an example — like the keeled sternum in birds or the mind in man — of a well established principle of progressive evolution. The inordinate development in selected species of organ or sense common to many is a course so regular in nature that it cannot be considered an irregularity.

Akin to this homing sense and operating in a way equally intangible to man there exists, in all probability, a food finding sense. Widely distributed and occasionally highly specialized within several lower groups, notably the insecta, the food finding sense has persisted in only a limited way among vertebrates. There is little evidence that it exists among mammals. It is somewhat broadly a part of bird life; and among birds it seems to be most highly developed in the carrion feeders.

In many species of birds doubtless only an adjunct to activity in ranging or acuteness of vision, the food finding sense — at least on the basis of strong presumptive evidence — is so highly developed in certain individuals among these carrion feeders that it can act independently of the known senses.

Many of the writer's observations on food finding in Turkey Vultures have been insufficiently explained by the common theory that these birds are directed to their food by the senses of sight or

smell. But the most striking observation — and the one which most strongly leads him toward a belief in a definite food finding sense — is an incident the facts of which are as follows:

At daybreak, January 1st, two hunters, one of them the writer, were out with their pack of foxhounds in the farming valley of the Little Conestoga south of Lititz, Lancaster County, Pa. The bottom was bare of snow though it was gray white with a heavy frost. The morning was quiet, practically windless, and the temperature was about 28 degrees — just cold enough to keep the ground firm. The scene had in it all the charm that attends starting a fox at winter sunrise. The voices of the hounds on the twisted night track were rapidly going up toward the happy burst that would tell of jumping the fox — when something went wrong. The music changed its tone and the younger hounds began to straggle in toward the horses; and then with the rest of the pack, and striking right and left among the hounds, came the cause of the breakup — a mad dog.

To borrow a gun, kill the dog, and throw his carcass into a limestone sinkhole was the work of about half an hour. It was then nine o'clock. Three hours later, at the request of a local veterinarian who wished to examine the dog, I returned to get the carcass. As I neared the hole two vultures climbed out and flapped away. They had been at the dog evidently some time for the flesh about the hams was much eaten away.

There were two unusual features in the situation which, as the mind dwelt upon them, made the presence of those vultures in the sinkhole most impressive if not uncanny.

The first of these was that there was no winter camp of the vultures nearer than the southern slope of the South Mountain — eight miles north of the spot. This roost, above the Speedwell-farms, always had fifty to a hundred birds about it and the vultures apparently stayed near the South Mountain. I have rarely, if ever, seen vultures ranging in the Little Conestoga valley during the winter, before or since the incident.

The second was that the dog was invisible from any part of the sky. The sinkhole was six or seven feet deep with an opening of about three feet. The shaft, inclined toward the south, went down at an angle of about 45 degrees and the walls were so irregular with

projecting rocks and soil that the carcass at the bottom was completely hidden from view.

Under the existing conditions it is difficult to account for the finding of the carrion by either eye or nose sense in the vultures. The dog being invisible and there being no vultures in the neighborhood when it was thrown into the hole, sight could scarcely have been involved; and the possibility of a freshly killed dog at the bottom of a six foot hole giving off enough scent in midwinter to attract birds miles away is out of the question, even after eliminating the fact that the sense of smell is but poorly developed generally among birds.

Assuming the correctness of the theory of a food finding sense as it exists to-day in certain species, the imagination naturally runs back to the earlier stages in the evolution of these species. Given by Nature the right to life — if life can be maintained, and the first essential of continued existence — food, it is perhaps logical and it is certainly well supported by analogies, that chance superiority in food finding would develop into something of permanent value in the species, and that the sense thus evolved would be the determining factor of survival among a host of related forms many of which succumbed in the struggle for existence. And it is reasonable too that this food finding sense should have been most highly evolved, during centuries of wide spread forest areas, and that it should have persisted up to the present times, in those species which were high soaring and carrion feeding; for logically, among the raptorial where hunting and killing powers were lacking, subsistence depended upon food that must have been, almost invariably, concealed as well as fortuitous.

Again assuming that two leading essentials for the maintenance of the species — finding food and finding the home — had been assisted by specialized senses, it should follow that the third prominent factor — mating — had been similarly safeguarded.

While there is no convincing evidence at hand in support of a definite mate finding sense among vertebrates, there are many baffling incidents of field observations which would find explanation in such a theory.

In insect life however there is evidence which if not conclusive is strongly contributive. Thus a common wasp — *Pelecinus* —

has been known and collected almost invariably in the female form. Specimens taken are always fertilized. Apparently rare to a mysterious degree the male wasp has seldom been collected or observed. A well known entomologist conceived the plan of rearing a female *Pelecinus* from the pupa. Properly caged the virgin wasp was placed out of doors. Within a few hours the screens of her cell were swarming with the mysterious male of her species. These wasps may have been guided by some highly refined phase of a well known sense, but it seems unlikely.

Unfortunately research on these occult senses is difficult — often impossible. Theories have to be based upon analogies and chance observations. Under these conditions chance observation must assume a somewhat greater significance than ordinarily is placed upon it.

On the basis of some impressive though fragmentary evidence then we are justified in assuming — at least as an attractive and perhaps stimulating working hypothesis — that intimately interwoven with the life histories of thousands of animal species of past ages and many species of the present day there is an active sense which may be called occult simply because it is hidden from the experience and understanding of man. This occult sense, involving direction, has taken three phases as developed by the prime necessities of life — food, mate and home in their relations to space. The purely defensive or offensive elements that have determined survival have evolved chiefly along physical and chemical lines in animals and finally along mental lines in man. All phases of the occult sense have long since been lost in the channels of life that progressed toward civilized man; they exist only selectively in animals below man to-day; but they are still an important factor of existence in many life forms, as they have been a potent determinant in past ages.

Franklin and Marshall College, Lancaster, Pa.

BIRDS OF THE CLEAR CREEK DISTRICT, COLORADO.

BY F. C. LINCOLN.

WHILE it is probably true that local lists are more or less tiresome to those entirely unacquainted with the region treated, it is nevertheless, quite as obvious that to the workers of any given territory, an accurate résumé of any portion of it, is of a distinct value. Particularly is this the case when the time comes for the ultimate comprehensive work which will sum up and combine the efforts of many individuals in many districts.

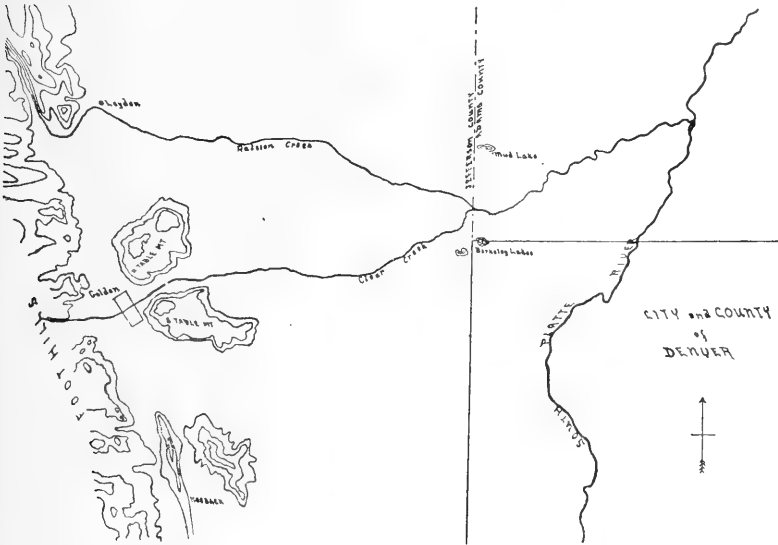
Recent years have seen several of these lists from Colorado, some of them containing much valuable data relative to the State's ornithology, and graphically contradicting the statement that Colorado has been "well-worked," although to those intimately associated with Colorado and her birds the fallacy was perfectly apparent. To fully appreciate this condition one had only to consider the extent of the State, the greatly varied topography and environment, coupled with the numerous life zones; all of which combine to produce an area where conclusive results are obtainable only after long and arduous activities.

Accordingly, with the feeling that he is adding to the knowledge of Colorado's ornithology, the author submits the following annotated list of the birds of the Clear Creek District.

Clear Creek valley proper extends from its junction with the South Platte River in Adams County, near Denver, to the mouth of its canyon in the foothills at Golden, Jefferson County. At the union of the creek with the Platte River the valley is approximately a mile and a half in width, narrowing gradually westward to about a quarter of a mile before passing between the North and South 'Table Mountains,' immediately east of Golden, the old territorial capital. West of the Table Mountains and separating them from the foothills, lies a narrow, steadily ascending lateral, or "paradox" valley, known as 'Hogback Valley,' in which the town of Golden is located, and of which about four miles to the north and the same to the south is tributary to Clear Creek. Beyond this are the foothills of the Front Range, marking the dividing line

between the Transition and Upper Sonoran life zones, in which latter the entire valley is located. Here agricultural activity with much irrigation has long been carried on effectively, but until recently considerable areas were in their natural wild state, with masses of impenetrable bushes, extensive swamps and groups of large trees, usually immediately adjoining the cultivated fields, thus offering ideal environments for many varieties of birds.

On the north and south bluffs overlooking the valley, are num-



erous thickets of Wild Plum (*Prunus americanus*), Choke-cherry (*Prunus melanocarpa*), and Hawthorn or Thorn-apple (*Crataegus*), where small streams fed by springs and seepage from the irrigated tracts, find their source. These streams form sloughs, heavily fringed with Willow (*Salix amygdaloides*), and Birch (*Betula fontinalis*), and supporting masses of Watercress (*Roripa*). In places they widen out into swampy ponds containing dense growths of cattails and tules with small areas of open water. Small groves of Broad-leaved Cottonwood (*Populus occidentalis*), and Box Elder, (*Rulac texanum*), are also of regular occurrence throughout the length and breadth of the valley.

The western edge of the district is marked by the Yellow Pine covered foothills, supporting many forms that wander into the valley after nesting time or follow it as a migrational highway.¹

North of the mouth of Clear Creek Canyon about eight miles, Ralston Creek, a left-hand tributary, leaves the foothills. This stream is small but deep and sluggish, and scantily wooded. After flowing past the Leyden mines it enters Clear Creek valley but nevertheless, maintains some semblance of an individual valley for several miles. Passing through the town of Arvada, it empties into Clear Creek a few miles above the junction of the latter with the South Platte River.

At irregular intervals, on both the north and south slopes of the valley, are numerous natural lakes, many of which are now put to practical uses, principally irrigation. Two, on the south slope, at the suburban town of Berkeley, are passed regularly in going to and from the lower valley on the interurban electric railway, and although the interval when they may be scanned for birds is brief, they have nevertheless, been the means of adding a few species to the list. Such records will be noted as "the lakes at Berkeley."

Another lake, on the north slope of the valley, known locally as Mud Lake, has also been visited spasmodically, and has yielded an additional portion.

Systematic work by the writer was begun in the spring of 1908. One day trips were made regularly, the average for 1910, 1911, and 1912 being thirty-five to the year, or of greater frequency than one each two weeks. During migrations they were made at least weekly, and occasionally semi-weekly, the longer intervals falling in the mid-summer and winter periods. An endeavor was made to render a complete record of breeding activities, by establishing permanent camps during June 1909, and June 1910, with an additional camp in the fall of the latter year. The total result of these operations is a number and variety of forms hardly to be expected in such a limited area.

¹This country to the west has been ably treated by Messrs. R. B. Rockwell and Alexander Wetmore. (Auk, Vol. XXXI, No. 3, 'A List of Birds from the Vicinity of Golden Colorado.' The present writer periodically visited this country (together with the Hogback ridge to the south) and secured species not recorded in the above mentioned paper. They will accordingly be incorporated in this list with due reference to the locality. F. C. L.

In almost every case the actual specimens have been secured and preserved, my collections from the district numbering about five hundred specimens, and in no case have species, based upon purely visual observations, been included which would in any sense constitute "records" for the State avifaunal list. Compilations have in this instance also been generally avoided, for, while the pioneer literature on the State's birds gives many interesting notes from this region (visual or specimens unpreserved) the absence of subsequent confirmation as well as their general indefinite nature, makes their authenticity a matter of grave doubt. I have accordingly confined myself to my own observations and collections with a few notes on certain species from the collections of the Colorado Museum of Natural History and the private collection of Mr. Egmont Rett, now of the same institution.

Mr. Rett's work in the valley began at approximately the time that my own ended, and has continued without interruption up to the present time. In addition to securing specimens which serve to confirm several of the writer's observations, he has obtained others that add species to the list. So with a view toward completeness, I proposed that he permit me to incorporate his notes and records in the present paper, to which he has graciously consented. I accordingly desire to take this opportunity to express to him my appreciation of his hearty co-operation.

***Æchmophorus occidentalis*.** WESTERN GREBE.—Accidental. One record; a specimen taken on Mud Lake, October 29, 1916, is preserved in the Museum collections.

***Colymbus n. californicus*.** EARED GREBE.—Mr. Rett reports Eared Grebes as fairly common of late years on Mud Lake during migrations. A few killed there every year by hunters who know them (together with the next) as "hell-divers."

***Podilymbus podiceps*.** PIED-BILLED GREBE.—Not common, but still noted regularly throughout the summers on the lakes, where they no doubt breed.

***Larus delawarensis*.** RING-BILLED GULL.—Rare. Four examples of this bird observed on the lakes at Berkeley, September 22, 1912.

***Sterna forsteri*.** FORSTER'S TERN.—Rare. Mr. Rett reports two birds on the Berkeley lakes during September, 1916. These lakes offer an abundant food supply and the species should be more common, at least during migrations.

Hydrochelidon n. surinamensis. BLACK TERN.—Rare. A single bird of this species was seen over a small pond close to the Creek, August 19, 1910.

Anas platyrhynchos. MALLARD.—Not common. A few seen regularly throughout the winters.

Chaulelasmus streperus. GADWALL.—Not common. Feeds in the water-cess ponds in small numbers during the winters.

Nettion carolinense. GREEN-WINGED TEAL.—Common at times during the fall migration. Occasionally found in irrigation ditches or even on the swiftly moving creek.

Querquedula discors. BLUE-WINGED TEAL.—Although this little duck nests commonly within twenty miles of Clear Creek, they are never common here, a few pair usually making up the complement for the season.

Spatula clypeata. SHOVELLER.—Mr. Rett noted a flock of about 30 individuals feeding in a field, flooded by an overflow, April 7, 1918.

Charitonetta albeola. BUFFLEHEAD.—Accidental. On November 3, 1912, I saw three females and one male at the edge of one of the lakes at Berkeley. This was within thirty feet of the rails of the electric road but they paid but scant attention to the passing cars. This duck is rarely more then common anywhere in Colorado.

Botaurus lentiginosus. BITTERN.—Rare. One secured from a willow patch bordering one of the seepage streams, August 29, 1910.

Ardea h. herodias. GREAT BLUE HERON.—Summer resident; nests near the Creek and the solitary figure of this bird is a regular feature of the Clear Creek landscape. From two to four would be noted daily.

Nycticorax n. naevius. BLACK-CROWNED NIGHT HERON.—Common summer resident although I have never found their nests in this vicinity.

Rallus virginianus. VIRGINIA RAIL.—Resident and fairly plentiful. More specimens have been taken in the winter than summer months. Adult and three downy young seen July 30, 1910.

Porzana carolina. SORA.—Rare. But two records are available; one by myself on August 27, 1911, and another from the same section taken May 29, 1912, in the Museum collections.

Fulica americana. COOT.—A plentiful summer resident on the small lakes in the valley.

Gallinago delicata. WILSON'S SNIPE.—Resident, but very erratic in its time of greatest abundance. Generally, however, it is more numerous in the fall or in mild winters. One secured March 26, 1913, from an irrigation ditch not two feet wide running through a sandy country.

Totanus melanoleucus. GREATER YELLOWLEGS.—Rare. An occasional example noted with flocks of *T. flavipes*.

Totanus flavipes. YELLOWLEGS.—Fairly common during fall migrations; rarely seen in the spring.

Helodromas s. cinnamomeus. WESTERN SOLITARY SANDPIPER.—On August 23, 1910, I secured one specimen of this bird from a flock of

about a dozen. A few scattered pair were subsequently noted during September. The next year another was secured on August 27, and their presence noted for about a month. Mr. Rett reports a specimen in his collection taken October 13, 1918, which is a couple of weeks later than my records.

Catoptrophorus s. inornatus. WESTERN WILLET.—Rare; two noted August 27, 1911, with a small flock of *T. flavipes*.

Bartramia longicauda. UPLAND PLOVER.—Accidental; a solitary bird was observed August 29, 1910, and Mr. Rett secured another August 15, 1915, but so badly shot as to be unfit for preservation.

Actitis macularia. SPOTTED SANDPIPER.—Common summer resident; remains until October 1. Have found downy young on July 25.

Oxyechus vociferus. KILLDEER.—Resident; plentiful. The incessant calling of one of these birds loses much of its 'wild charm' when by its noise it succeeds in frightening a desired specimen. They are usually in flocks by the middle of August.

Colinus v. virginianus. BOBWHITE.—At present it is necessary to refer the Bobwhites of this District tentatively to the eastern variety, as they are the descendants of stock introduced from the east, and are quite distinct from the native birds of the eastern section of the State, *C. v. taylori*.¹ Nevertheless, environmental and climatic changes have done their work and the birds of the Creek valley do not compare perfectly with typical *virginianus* from the east.

Phasianus torquatus. RING-NECKED PHEASANT.—Introduced; plentiful, and steadily increasing although but little loved by the farmers who accuse them of serious damage to crops.

Dendragapus o. obscurus. DUSKY GROUSE.—In late summer the females lead their half-grown young to the lower slopes of the foothills where an abundance of insect life and berries is obtainable. On September 4, 1911, I secured three birds near Golden within a quarter of a mile of the valley flats. The crops of all were crammed with the berries of kinnikinnick. Not as common now as formerly.

Zenaidura m. marginella. WESTERN MOURNING DOVE.—Abundant summer resident. Have taken fresh eggs as late as August 30, and found fresh shells by May 7. In mild seasons some remain until the first of November and I have one record for the middle of January, but this may have been a crippled bird.

Circus hudsonius. MARSH HAWK.—Not uncommon in the summer and may nest.

Accipiter velox. SHARP-SHINNED HAWK.—Fairly common in the winter months. Have seen them attack and cripple birds as large as the Flicker (*Colaptes c. collaris*).

¹ Pro. Bio. Soc. of Wash. Vol. XXXVIII, pp. 103-104, "Description of a New Bobwhite from Colorado," by F. C. Lincoln.

Accipiter cooperi. COOPER'S HAWK.—Rare. One seen a few times in the winter of 1908–1909, and another February 5 and 12, 1910.

Astur a. atricapillus. GOSHAWK.—Rare or accidental. The only record is one found dead by Mr. Rett, February 25, 1917. Near it were the remains of a large Plymouth Rock hen.

Buteo b. calurus. WESTERN RED-TAIL.—The commonest large hawk. One taken October 5, 1907, had both feet, the mandible, and a quantity of flesh of a chicken apparently freshly killed, in its crop. This is the only instance of their attacking poultry that I have ever noted and it is of course possible that this may have been taken in the form of carrion.

Archibuteo l. sancti-johannis. ROUGH-LEG.—Seen occasionally during the winter. On December 26, 1910, I surprised one feeding on a house cat that I had killed a week before.

Aquila chrysaetos. GOLDEN EAGLE.—Seen occasionally around the foothills.

Falco mexicanus. PRAIRIE FALCON.—Summer visitant. Nests in the Garden of the Red Rocks, eight miles to the south, but only seen in this district when on foraging expeditions.

Falco s. sparverius. SPARROW HAWK.—Rare. A pair, evidently preparing to nest, taken April 8, 1911, now mounted in the collection of Colorado birds at the Museum, are referable to true *sparverius*.

Falco s. phalaena. DESERT SPARROW HAWK.—All other specimens secured seem referable to this variety, which is a plentiful summer resident. A set of five eggs was taken from an old Magpie's nest, May 22, 1909, although woodpecker holes are usually preferred.

Asio wilsonianus. LONG-EARED OWL.—Resident; common at times. On April 8, 1911, in a patch of timber and weeds about an acre in extent, one Rocky Mountain Screech, one Long-eared, one Short-eared and one Western Horned Owl, were seen. On December 31, 1909, six Long-eared Owls were noted, three of them being together in an old Magpie's nest. This species is occasionally noted hunting in the daytime.

Asio flammeus. SHORT-EARED OWL.—Not common. In addition to the one noted above, I have one taken February 19, 1910, but Mr. Rett reports 12 observed in a low swampy field, November 25, 1917.

Otus a. maxwelliæ. ROCKY MOUNTAIN SCREECH OWL.—Common. Nests by the first of April in old woodpecker holes. The usual operation of pounding smartly on the tree is not always efficacious in bringing them out, some having to be pulled bodily from the hole, an operation they are well fitted to resist. Some holes seem to be especially favored and I have taken as many as five different birds from one Flicker hole in one season.

Otus a. aikenii. AIKEN'S SCREECH OWL.—Rare. A few specimens have been taken that are nearly typical of this small form.

Bubo v. lagophonus.¹ NORTHWESTERN HORNED OWL.—The specimen

¹ Cf. Oberholser, Proc. U. S. Nat. Mus., 1904, p. 185. This form is not separated from *B. v. saturatus* in the A. O. U. Check-List.

of this race taken by Rockwell and Wetmore, now at the Colorado Museum, is from this district.

Bubo v. pallescens. WESTERN HORNED OWL.—Rare. One taken April 8, 1911.

Speotyto c. hypogæa. BURROWING OWL.—A few may generally be noted at a 'dog-town' near the mouth of the Creek. Mr. Rett tells me he secured a bird at this point by digging it out in May, 1915.

Coccyzus a. americanus. YELLOW-BILLED CUCKOO.—A few Yellow-billed Cuckoos may be noted every spring and fall and of a series submitted to the Biological Survey for determination three were returned as *americanus* and one as *occidentalis*. *C. a. americanus*, however, is assumed to be the common form in eastern Colorado.

Coccyzus a. occidentalis. CALIFORNIA CUCKOO.—Rare. Noted with *C. a. americanus*.

Coccyzus erythrophthalmus. BLACK-BILLED CUCKOO.—Black-billed Cuckoos are decidedly rare anywhere in Colorado and the two birds from this district form the fourth and fifth records for the State. Strangely enough, they were taken a year apart to the day, July 30, 1910 and July 30, 1911, and within a half mile of each other. (Coll. F. C. L. 122 and 242). The first had been feeding on the larvæ of the tent caterpillar, and its crop and stomach were furred with their spines.

Ceryle a. alcyon. BELTED KINGFISHER.—A regular summer resident here as on almost every creek in the State, though rarely more than one pair noted during the season.

Dryobates v. monticola. ROCKY MOUNTAIN HAIRY WOODPECKER.—Winter resident, common. Usually solitary, but occasionally two or three will be noted together. Observed as early as the first of September.

Dryobates p. homorus. BATCHELDER'S WOODPECKER.—Winter resident, common. Seen in about the same numbers as *D. v. monticola*. Specimens rarely have the white pure, being soiled by contact with the bark of the cottonwoods.

Dryobates p. medianus. DOWNY WOODPECKER.—Mr. Rett's record of this form (Auk XXXV, 1918, p. 223) from this district, is of exceptional interest as additional evidence of the westward movement of many birds generally considered as purely 'eastern.'

Sphyrapicus v. nuchalis. RED-NAPED SAPSUCKER.—Rare. Noted by me on two or three occasions and Mr. Rett's collection contains a specimen taken May 12, 1918.

Sphyrapicus thyroideus. WILLIAMSON'S SAPSUCKER.—Rare, and only seen once or twice in the Yellow Pines at the western edge of the district.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.—Common summer resident. Arrives about May 25, and remains until the first of November.

Asyndesmus lewisi. LEWIS'S WOODPECKER.— Fairly common winter resident and a few have been seen throughout the summer although I have never known them to nest below the Yellow Pine zone in this section of the State.

Colaptes c. collaris. RED-SHAFTED FLICKER.— Abundant resident. Usually mated before the winter snows have melted.

Phalænoptilus n. nuttalli. POOR-WILL.— Rare. One was repeatedly flushed September 21, 1907, but was not secured. Mr. Rett, however, obtained a fine specimen May 20, 1917.

Chordeiles v. henryi. WESTERN NIGHTHAWK.— Summer resident, plentiful. Arrives about the first of June and frequently remains until the first of October unless driven out by early storms.

Aeronautes melanoleucus. WHITE-THROATED SWIFT.— Rare. Noted only during spring migrations, when a few will be observed flying toward the mountains.

Selasphorus platycercus. BROAD-TAILED HUMMINGBIRD.— Not common. Most of the hummers of this region seem to prefer the environs of Denver where an abundance of flowers is assured throughout the summer.

Tyrannus tyrannus. KINGBIRD.— Summer resident, common. Arrives by the middle of May and is nesting by June first.

Tyrannus verticalis. ARKANSAS KINGBIRD.— Summer resident; rather more common than *T. tyrannus*. Arrives and nests about the same dates.

Myiarchus c. cinerascens. ASH-THROATED FLYCATCHER.— Rare. A specimen taken from a willow thicket, September 17, 1911, and a report of one seen May 26, 1912, by the late E. P. Schuetze, are my only records.

Sayornis phœbe. PHEBE.— Rare. But one record; a specimen (the second record for Colorado) was taken by Mr. F. L. Kemmerling, September 17, 1911, and is now in my collection (Coll. F. C. L. No. 454).

Sayornis sayus. SAY'S PHEBE.— Summer resident, not uncommon. Arrives early in April and generally selects deserted out-buildings or bridges as nest sites.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.— Rare, migratory. Mr. Rett reports two observed September 9, 1917, associated with a number of Western Wood Pewees; and one other secured May 17, 1918.

Myiochanes r. richardsoni. WESTERN WOOD PEWEE.— Summer resident; perhaps the most common of the small flycatchers. More frequently heard than seen.

Empidonax difficilis. WESTERN FLYCATCHER.— Rare; seen and taken only during August and September.

Empidonax t. trailli. TRAILL'S FLYCATCHER.— Summer resident. From June 12 to 19, 1910, this flycatcher was very common and was evidently nesting in the dense thickets of wild plum, although no nests were found. Several specimens were taken.

Empidonax t. alnorum. ALDER FLYCATCHER.— Rare. A specimen

of this variety was secured on June 4, 1911, the second record for the State, and another on August 6, 1911. (Auk, Vol. XXX, p. 112). At the time *Empidonax* were common and it is not improbable that persistent collecting of the genus would have revealed still other examples.

***Empidonax minimus*.** LEAST FLYCATCHER.—Rare. Only noted on migration. I secured a pair August 8, 1911, and Mr. Rett's collection contains one taken August 30, 1914.

***Empidonax wrighti*.** WRIGHT'S FLYCATCHER.—Rare or accidental. Mr. Rett's collection includes a specimen of this species taken May 19, 1918 (Coll. E. R. No. 291). This probably marks the eastern limits of the species.

***Otocoris a. leucolæma*.** DESERT HORNED LARK.—Winter resident, abundant.

***Otocoris a. enthymia*.** SASKATCHEWAN HORNED LARK.—About thirty per cent of the specimens secured in the winter are referable to this variety. Although not recognized by the A. O. U. Committee, my specimens seem to uphold its characters as their differences from *leucolæma* are quite pronounced and agree with the characters of no other race.

***Pica p. hudsonia*.** MAGPIE.—Plentiful resident. A feature of the landscape that would be missed were they exterminated as has been advocated. One cannot but admire them despite their rascality. Complete sets of eggs found March 31.

***Cyanocitta s. diademata*.** LONG-CRESTED JAY.—Common winter resident in the valley. Resident in the foothills.

***Aphelocoma woodhousei*.** WOODHOUSE'S JAY.—Winter resident; common some years, and entirely absent at others. Generally, they are more readily approached than *C. s. diademata*.

***Corvus b. brachyrhynchos*.** CROW.—Not common. One noted November 19, 1910. Dr. W. H. Bergtold has recently shown (Auk, XXXVI, pp. 198–204) that the Crows of the eastern portion of Colorado are principally of this subspecies. The occasional examples seen in the Clear Creek District are therefore, so referred. No specimens have been taken.

***Cyanocephalus cyanocephalus*.** PINON JAY.—I am indebted to Mr. Rett for the opportunity to include this bird. He tells me that on October 24, 1915, a flock of about 50 individuals was seen, two being secured. They were subsequently noted weekly until November 25, when he again secured specimens. They had not been observed in the valley previously, nor since, to my knowledge.

***Dolichonyx oryzivorus*.** BOBOLINK.—Rare. The only record is a specimen in the moult, taken August 5, 1911 (Coll. F. C. L. No. 248).

***Molothrus a. ater*.** COWBIRD.—Summer resident, common. Red wings, Yellow-heads and Yellow-throats seem to be the species most generally imposed upon in this region.

***Xanthocephalus xanthocephalus*.** YELLOW-HEADED BLACKBIRD.—

Summer resident, plentiful. Almost every cattail swamp will contain a small colony.

Agelaius p. fortis. THICK-BILLED RED-WING.— Abundant resident. Females not common or rare in winter. Nests with equal readiness in the willow thickets and cattail swamps.¹

Sturnella neglecta. WESTERN MEADOWLARK.— Resident; plentiful. Only males noted during the winter.

Icterus bullocki. BULLOCK'S ORIOLE.— Summer resident; common. A regular arrival on May 7 or 8.

Euphagus carolinus. RUSTY BLACKBIRD.— Rare. The only record is a female taken from a small flock of Red-wings, April 14, 1912 (Coll. F. C. L. No. 125).

Euphagus cyanocephalus. BREWER'S BLACKBIRD.— Occasionally, an abundant spring and fall migrant, while a pair or two will rarely remain and nest. A flock, estimated at two thousand individuals noted August 20, 1910.

Quiscalus q. æneus. BRONZED GRACKLE.— Although a fairly common breeder in the parks of Denver, but few have been observed in this District; all in June.

Carpodacus cassinii. CASSIN'S PURPLE FINCH.— Winter resident; plentiful some years. During the winter of 1910-11 they were especially numerous.

Carpodacus m. frontalis. HOUSE FINCH.— Resident; common; more so in winter than in summer when large flocks congregate to feed in the weed patches.

Leucosticte t. tephrocotis. GRAY-CROWNED ROSY FINCH.— Winter visitant to plains and Hogbacks near Golden. A flock numbering several hundred was seen November 24, 1910. On January 1, 1912, one was secured from a 'clay pit' where a small flock had taken refuge from the wind.

Leucosticte t. littoralis. HEPBURN'S ROSY FINCH.— Two perfect examples of this variety were taken on Ralston Creek, near Leyden, January 11, 1913. They were with a flock of *L. t. tephrocotis*, as they generally are and it is not improbable that the large flocks noted near Golden also contained this form.

Leucosticte atrata. BLACK ROSY FINCH.— On January 1, 1912, a fine male of this species was observed with a flock of Gray-crowns. I was within fifteen feet of him but as he was on the edge of a clay pit I did not dare shoot as his recovery from the snow filled pit would have been a doubtful if not hazardous matter.

Acanthis l. linaria. REDPOLL.— Common visitant during certain

¹ *Agelaius p. neutralis* has also been taken east of the mountains in Colorado and intensive collecting among the Red-wings of Clear Creek would no doubt reveal its presence, although all in my series are referable to *fortis*. See Rockwell; (Condor, Vol. X, 1908, p. 93) 'The Red-winged Black-birds of Colorado.'

winters when it feeds extensively on the seeds of the Russian Thistle (*Salsola pestifer*).

Astragalinus t. tristis. GOLDFINCH.—

Astragalinus t. pallidus. PALE GOLDFINCH.—I am not at all satisfied with the published status of these two forms in eastern Colorado, and in this particular District it is exceptionally confusing as one is either a resident, or one a summer and the other a winter resident. The tallest cottonwoods are selected for nest sites and large flocks are of daily note in winter.

Astragalinus p. psaltria. ARKANSAS GOLDFINCH.—Not common. A few noted August 24, 1912, form my only record although it should be more numerous as it nests regularly in Denver, and I have taken it at Morrison, eight miles south.

Spinus pinus. PINE SISKIN.—Winter resident; plentiful. Usually associated with *Astragalinus*. Occasionally arrive by August 20 and I have heard them singing all winter.

Calcarius l. alascensis. ALASKAN LONGSPUR.—Winter resident, common some years. A good series was secured during the winter of 1912. Always associated with *Otocoris* but are readily discernible both by flight and note.

Poœcetes g. confinis. WESTERN VESPER SPARROW.—Common migrant, especially in the fall, and a few no doubt nest on the bench lands of the valley slopes.

Passerculus s. alaudinus. WESTERN SAVANNAH SPARROW.—Not common. Taken only on migrations; April 7 to 22, and in the latter part of September.

Ammodramus s. bimaculatus. WESTERN GRASSHOPPER SPARROW.—Rare; one secured and two others seen July 28, 1912, in Hogback Valley, north of Golden, and I have no doubt they had or were nesting there.

Chondestes g. strigatus. WESTERN LARK SPARROW.—Summer resident; common. Arrives about the middle of May.

Zonotrichia querula. HARRIS'S SPARROW.—Winter resident; not common. I believe many of these birds are overlooked as I have found them extremely hard to raise from the dense thickets they frequent. Were repeatedly seen and a few taken during the winter of 1912.

Zonotrichia l. leucophrys. WHITE-CROWNED SPARROW.—Common migrant, always found with *Z. l. gambeli*. Remain at times until the first of December.

Zonotrichia l. gambeli. GAMBEL'S SPARROW.—Plentiful winter resident and present (rarely) to the twelfth of June. Usually a large percentage of each flock will be in the immature plumage.

Spizella m. ochracea. WESTERN TREE SPARROW.—An abundant winter resident. Comes in about the first of October and stays until the middle of March or later, depending upon the severity of the last storms of winter.

Spizella p. arizonæ. WESTERN CHIPPING SPARROW.—Common summer resident. Very abundant in late summer just previous to migration. The dates of arrival and departure of *S. m. ochracea* and *S. p. arizonæ* frequently meet or overlap slightly.

Spizella pallida. CLAY-COLORED SPARROW.—Not common or rare. Only seen during the fall migration.

Spizella breweri. BREWER'S SPARROW.—Not an uncommon fall migrant and I have one taken May 29, 1909.

Junco aikenii. WHITE-WINGED JUNCO.—Winter resident; not uncommon. More numerous in the lower gulches of the foothills.

Junco h. hyemalis. SLATE-COLORED JUNCO.—Not an uncommon visitor and perhaps a resident during the winter months. I secured one April 2, 1911, and found it common during April, 1912, near Golden. I think it probable that many examples of this form are mistaken for *aikenii* or *connectens* and so overlooked.

Junco h. connectens. SHUFELDT'S JUNCO.—Winter resident; plentiful. Generally associated with *mearnsi* or *Spizella m. ochracea*.

Junco h. montanus. MONTANA JUNCO.—Winter resident. Always found in the same flocks and so closely resembling *mearnsi* or *connectens*, many examples of *montanus* escape detection, but I believe they may be ranked as common. Good, though small, series have been secured. Apparently more numerous from January to the middle of April.

Junco h. mearnsi. PINK-SIDED JUNCO.—With *Spizella m. ochracea*, the most abundant winter resident. A few will frequently arrive by the middle of September and May is often advanced before the last has gone north.

Junco p. caniceps. GRAY-HEADED JUNCO.—Common migrant and rare winter resident. Nests in the foothills above Golden. (See Rockwell and Wetmore, 'Birds of Golden, etc.')

Melospiza m. montana. MOUNTAIN SONG SPARROW.—Resident; plentiful.

Melospiza l. lincolni. LINCOLN'S SPARROW.—Migrant; not common. Either a late fall and early spring migrant or else a few remain through the winter as I have taken it in October and March.

Passerella i. iliaca. FOX SPARROW.—The only record for Colorado is the specimen from this district taken November 1, 1916 (Auk, Vol. XXXV, 1918, p. 236). The bird was secured from a willow thicket in a swamp below the south bluffs of the valley, and is an adult male in typical plumage.

Pipilo m. arcticus. ARCTIC TOWHEE.—

Pipilo m. montanus. SPURRED TOWHEE.—Colorado is in the territory where these two geographic races overlap and their status is not very clearly defined. Except with examples absolutely typical, visual identification is impossible, but in a series submitted to the Biological Survey for determination both forms were found in numbers, a slight

advantage resting with *montanus*. The species is resident and fairly common. Nests in June.

Oreospiza chlorura. GREEN-TAILED TOWHEE.—Migrant; not common.

Zamelodia melanocephala. BLACK-HEADED GROSBEEK.—Summer resident; common. Nests in numbers and is one of our sweetest songsters, both sexes joining with no appreciable difference in song.

Passerina cyanea. INDIGO BUNTING.—The occurrence mentioned by Rockwell and Wetmore (Birds of Golden) is from this immediate district and is the only record of recent date.

Passerina amoena. LAZULI BUNTING.—Summer resident; common some years. Arrives late in May and I have found nests with fresh eggs up to the last of July, their lateness suggesting a second set.

Calamospiza melanocorys. LARK BUNTING.—Summer resident; common in the adjoining hay and alfalfa fields. More numerous some years than others.

Passer d. domesticus. ENGLISH SPARROW.—Plentiful. Practically every farm will support a colony and a few seem permanently attached to each bridge. I have noticed no ill effects on the native birds here, although such evidence is abundant enough in Denver where I have successfully used strychnine in combatting them.

Piranga ludoviciana. WESTERN TANAGER.—Migrant. Seen in greatest numbers in late July and August.

Petrochelidon l. lunifrons. CLIFF SWALLOW.—Summer resident; abundant. Arrives about the middle of May and nests in large colonies. Their presence seems welcome around the farms. Migrates early in September.

Hirundo erythrogastra. BARN SWALLOW.—Summer resident; common. Usually arrives a few days earlier than *lunifrons* but in smaller numbers; leaves later in September. They start building very soon after their arrival as I have noted them carrying nest material on May 20.

Tachycineta t. lepida. NORTHERN VIOLET-GREEN SWALLOW.—Migrant. A large flock may generally be noted in the vicinity of Golden about May 20.

Riparia riparia. BANK SWALLOW.—The rarest of the swallows in this district, although nest sites are plentiful and large colonies may be found within fifteen or twenty miles. A specimen secured August 29, 1910.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—Summer resident; common. Two colonies have nested in the creek bottom for several years. On July 23, 1911, I estimated one of these to contain a hundred and fifty individuals.

Bombycilla garrula. BOHEMIAN WAXWING.—Irregular but abundant winter visitant. During the early months of 1909, they were very abundant in Colorado and large flocks were of daily note on Clear Creek. The non-freezing swamps with their patches of water-cress were especially

favorable. A minute snail which is found on this plant, proved to be the attraction. They were noted weekly to April 3.

A more recent visitation of this species occurred early in 1917, the birds appearing in even greater numbers in the Creek valley and surrounding country. A detailed account of this invasion was given by the writer in 'The Auk,' Vol. XXXIV, 1917, p. 341.

Lanius borealis. NORTHERN SHRIKE.—Winter resident; common. My own observations do not serve to verify the defense made of this bird by others, who credit it with the destruction of English Sparrows. This may be true to some extent where the bird frequents city parks, but I have yet to see this species fall as its prey, while I have seen it capture Tree Sparrows, Juncos, Chickadees, Horned Larks, and on one occasion a Hairy Woodpecker was seriously crippled, but saved by my intervention. A quart of wheat with half an ounce of strychnine, used judiciously, will do far more toward eliminating the Sparrows in any one neighborhood, and with less danger to the native birds.

Lanius l. excubitorides. WHITE-RUMPED SHRIKE.—Only noted in the spring migration although it should nest in this vicinity. The account of habits under *borealis* does not apply to this bird if my observations are correct, as I have never seen *excubitorides* kill a bird and believe their food is principally of an insect nature.

Vireosylva olivacea. RED-EYED VIREO.—Rare. A male and female were secured August 18, 1911. They were feeding a young bird which escaped. Other specimens taken May 26, 1912, and August 8, 1912. Most of the Colorado records of this bird are of migrants and I believe the above note is the first actual occurrence of their breeding, reported.

Vireosylva g. swainsoni. WESTERN WARBLING VIREO.—Summer resident; not uncommon. More frequently heard than seen. Occasionally found in small groups (family parties, in all probability) in late July or August.

Lanivireo s. plumbeus. PLUMBEOUS VIREO.—Rare. Only record, a specimen secured June 2, 1912 (Coll. F. C. L. No. 386).

Vermivora virginia. VIRGINIA'S WARBLER.—Migrant; not common. First of spring usually noted about May 25, when the plum thickets are in bloom. Not often seen in the fall.

Vermivora c. celata. ORANGE-CROWNED WARBLER.—Migratory; common during both spring and fall migrations; the majority of those taken being referable to this form, although a few of the next have also been taken.

Vermivora c. lutescens. LUTESCENT WARBLER.—Migratory; rare. Only two or three specimens of this variety have actually been identified.

Dendroica a. aestiva. YELLOW WARBLER.—Summer resident; common. Arrives about May 15.

Dendroica coronata. MYRTLE WARBLER.—Migrant; not common. Generally associated with flocks of *D. a. auduboni* with which it may be classed as the earliest of the Mniotiltidae to arrive. Rarely seen in the fall.

Dendroica a. auduboni. AUDUBON'S WARBLER.—Abundant migrant. During the month of May this is one of the commonest birds. Have known them to arrive by April 20.

Dendroica townsendi. TOWNSEND'S WARBLER.—Rare; but two records. The first was taken near Golden, September 4, 1911, and the second, a male in full plumage, in the creek bottom, September 9, 1912. This last was feeding with a flock of Chipping Sparrows in the cottonwoods (Coll. F. C. L. Nos. 295 and 405).

Seiurus n. notabilis. GRINNELL'S WATER-THRUSH.—Migrant; not common. Seen in both spring and fall migrations, as solitary birds or scattered pairs. Have taken several specimens in late May, late August and early September. The willow and birch thickets are their usual retreats.

Oporornis tolmiei. MACGILLIVRAY'S WARBLER.—Migrant; not common. Seen principally in the fall.

Geothlypis t. occidentalis. WESTERN YELLOW-THROAT.—Summer resident; plentiful. Frequents the swamps and thickets and is heard continuously. Another early arrival, closely following *D. a. auduboni*, and nesting by the 1st of June.

Icteria v. longicauda. LONG-TAILED CHAT.—Summer resident; common. An inhabitant of the dense plum thickets where their nests are absolutely safe, even from the reach of an enthusiastic ornithologist. Have heard them sing repeatedly during the night while I have been in camp.

Wilsonia p. pileolata. PILEOLATED WARBLER.—Migrant; abundant. Spring arrivals rarely noted before May 10. Fall migration begins about the middle of August and the last is usually gone by the middle of September.

Wilsonia canadensis. CANADA WARBLER.—This warbler is always rare in Colorado so that Mr. Rett's specimen, taken in this region, May 26, 1917, is of more than local interest. (Auk, XXXV, 1918, p. 229).

Setophaga ruticilla. REDSTART.—Rare. An adult female taken August 24, 1912, is the only record (Coll. F. C. L. No. 415).

Anthus rubescens. PIPIT.—Rare migrant. A flock of four seen October 14, 1911.

Cinclus m. unicolor. WATER OUZEL.—Rare in the creek valley although generally seen in the cañon above Golden. I secured a male, however, several miles from the cañon, November 13, 1910.

Oreoscoptes montanus. SAGE THRASHER.—Apparently a rare migrant in the valley. I secured an immature male near Leyden, July 28, 1912, and Mr. Rett reports one taken September, 1, 1918.

Mimus p. leucopterus. WESTERN MOCKINGBIRD.—Probably a rare summer resident, but records of its occurrence are too few for a definite statement to this effect. I have only seen it in May but this is well within the breeding range and nest-sites are plentiful.

Dumetella carolinensis. CATBIRD.—Summer resident; plentiful.

Arrives before May 15, is nesting by June 10 and fledglings out of the nest are of note by July 15.

Toxostoma rufum. BROWN THRASHER.—Summer resident; common. Arrives, nests and leaves about the same dates as *D. carolinensis*.

Salpinctes o. obsoletus. ROCK WREN.—Migrant; not common. The enormous piles of boulders thrown up in the days of placer mining here, are usually occupied by one or two Rock Wrens during the late summer and early fall. Nests in the foothills.

Catherpes m. conspersus. CAÑON WREN.—Resident, but not common on the Hogback. Their call is exceptionally ventriloquil, and being an adept at dodging behind and beneath rocks and bushes, this handsome wren is hard to locate. Seven noted on this ridge, January 1, 1912, four of which were secured. Their song and call are unusually melodious, even for a wren, and could be confused with no other bird.

Troglodytes a. parkmani. WESTERN HOUSE WREN.—Summer resident; plentiful. The familiar House Wren is found everywhere, where the underbrush is to his liking. On one occasion (June, 1909) a pair made their nest in a crack of a cottonwood, which was so situated, that in order to enter they had first to pass through my tent. Deserted Flicker holes are also used as nesting apartments.

Telmatodytes p. plesius. WESTERN MARSH WREN.—Migrant; not common. Only seen in April. The willows on the right of way of the interurban electric line, are periodically cut and piled, making retreats especially favored by marsh wrens. I have taken a few each year.

Certhia f. montana. ROCKY MOUNTAIN CREEPER.—Rare. I find but three records of the occurrence of this bird in the creek valley, although they are not uncommon in the Yellow Pines of the adjoining foothills. I observed one October 30, 1909, and Mr. Rett has two others taken November 14, 1916 and December 30, 1917.

Sitta c. nelsoni. ROCKY MOUNTAIN NUTHATCH.—Ordinarily, not common in the valley but during September and October, 1910, several were noted and a few secured. More numerous in the foothills.

Sitta p. pygmæa. PYGMY NUTHATCH.—Pygmy Nuthatches are plentiful winter residents of the Yellow Pine zone, but I have never known them to enter the belt of cottonwoods and willows immediately below.

Penthestes a. septentrionalis. LONG-TAILED CHICKADEE.—Winter resident; plentiful. In the fall, both *septentrionalis* and *gambeli* are found in the same flocks, and in about equal numbers, but *gambeli* soon leaves its long-tailed cousins in complete possession for the winter. The Long-tails also reach the valley first, usually by the first of August.

Penthestes g. gambeli. MOUNTAIN CHICKADEE.—Migrant; plentiful. Its absence in the winter is only from the first of November to the middle of March.

Regulus c. calendula. RUBY-CROWNED KINGLET.—Migrant; common, more so some years than others. Generally more numerous in the fall.

Regulus s. satrapa. GOLDEN-CROWNED KINGLET.—Rare. One record; an adult male taken on the Hogback, October 6, 1912 (Coll. F. C. L. No. 424). Another bird that may be found with considerable regularity in winter in the Yellow Pines.

Myadestes townsendi. TOWNSEND'S SOLITAIRE.—Visitant; rare. One (probably the same individual) seen on three occasions, March 30 and 31, and April 1, 1910. Two others noted March 17, 1912. They are common in the vicinity of Morrison, eight miles south.

Hylocichla f. salicicola. WILLOW THRUSH.—Migrant; rare. I secured a single specimen from a willow thicket, May 14, 1910, and Mr. Rett has two others, taken May 19 and 27, 1917. No fall records.

Hylocichla g. guttata. ALASKA HERMIT THRUSH.—Rare migrant. Two specimens are all that are available; one taken May 14, 1910 and the other October 14, 1911.

Hylocichla g. auduboni. AUDUBON'S HERMIT THRUSH.—Migratory; not common. This is the Hermit Thrush that breeds in the mountains of Colorado, but rarely below 7500 or 8000 feet.

Hylocichla u. swainsoni. OLIVE-BACKED THRUSH.—Common migrant. Generally noted in spring about the 20 of May.

Planesticus m. propinquus. WESTERN ROBIN.—Resident; plentiful. Winters in numbers whenever the crop of Thorn-apples (*Crataegus*) is good. A flock, I estimated at 200 individuals wintered in one of these thickets near Morrison, south of Clear Creek, during the winter of 1909-10.

Sialia s. sialis. BLUEBIRD.—My only records of the eastern Bluebird in the valley come from Mr. Rett, who reports taking two October 8, 1916, at which date he saw three others. His collection contains still another example taken from a flock of about twenty Mountain Bluebirds, October 13, 1918.

Sialia m. bairdi. CHESTNUT-BACKED BLUEBIRD.—Personally, I have not taken this form in the valley proper, although I have specimens from the adjacent foothills. But Mr. Rett secured two from a flock of four on the Hogback, April 30, 1917.

Sialia currucoides. MOUNTAIN BLUEBIRD.—Abundant migrant and uncommon summer resident. Large flocks generally pass through the valley in late March, the majority of them retiring to the mountains to nest, but an occasional pair or two remain in the valley throughout the summer.

Colorado Museum Natl. Hist., Denver, Colo.

SANDPIPERS WINTERING AT PLYMOUTH, MASSACHUSETTS.

BY J. A. FARLEY.

THE wintering of the hardy Sanderling and the Red-backed Sandpiper was an interesting event in 1917 on Plymouth Beach. We fail to find in a hasty search through the literature other records of the wintering of these two species north of Cape Cod. The winter of 1916-17 was an average one. It was not an open winter; nor was it very severe like the following very bitter season of 1917-18. The weather conditions from week to week through this winter were noted with some care because of their intimate relation to the daily lives of the sandpipers during the same period.

Through the fall of 1916 Sanderlings were on Plymouth Beach as usual and my last note (November 26) reads: "Saw a half-dozen Sanderlings — one poor little fellow was bobbing along less speedily on one leg — only the upper half (i. e., above the heel) of the other leg was left. It was hanging down. Saw one or two Sanderlings that sat down by a bunch of drift as if to rest. There were some Snow Buntings on the beach with the Sanderlings. The day was sunny but quite cold and blowy."

I was not on Plymouth Beach again until January 14, 1917. On the morning of the 12th the temperature ranged from just below zero to 2° above. By evening of the 12th it was 12° above. On the 13th there was a rising temperature and by night it was above freezing and there was rain. It was warmer on the morning of the 14th. "The southeast rain last night and this forenoon has taken off most of the snow. The wind blew heavily, — especially at noon when it rained very hard. In the afternoon there was clearing weather."

I was on the beach between 1 and 2 P. M. and found, as I expected, some Sanderlings. There were at least three. They were at their favorite spot where the water shoals a good deal on the outside and sandspits make out which are exposed when the tide recedes. Other accompaniments to the mid-January scene were a lot of quite tame Black Ducks in the Inner Harbor ready to

feed when the flats had become sufficiently exposed; and Gulls dropping mussels. Snow Buntings were on the beach and in the beach grass.

The week of January 14 was a week of winter weather — cool or cold but no storm. A little snow fell on the night of the 20th so that I found it lying thinly on the sand of the beach on the following morning. “The tide was falling, leaving the shore with a thin veneer of ice. There was ice over everything in fact—from high-water mark down to the gently receding water. And back of the ice lay the fine snow on the sand of the upper beach. Everywhere there were floating bits of ice in the water on the bay side (outer side) of the beach, and farther out there were floes — big and little — going fast out to sea on the swift current running from the Inner Harbor. Seals lay on this floating ice — ‘as cool as you please.’ It was altogether a wintry scene. Yet it was not a cold morning. In the same place as on the 14th where the beach broadens very much at low water saw the usual three Sanderlings, and with them a Red-backed Sandpiper. They seemed to mind not at all the snow on the sand. They were not shy, and to avoid me they would run (up to the last moment) rather than fly. They were thus more fearless than during the fall flight. The Red-backed Sandpiper was quite tame — or fearless. I could get within a few feet of him. At times he waded belly-deep in the ice-cold water, and was busily engaged in picking in the shallow water. I could not see what he was eating, although he may have been probing. The tide finally fell so that there was fresh green eel grass on the beach, but earlier in the forenoon the icy sand seemed to have no food.

“Other forms of life typical of the beach on this January morning were the thousands of ducks in the Inner Harbor where there were practically no flats as yet exposed. Many of the fowl were Black Ducks floating in the water (which grew shallower every minute) over the flats which would finally be exposed. There were many Whistlers — outside among the ice floes and inside the beach and flying around the Spindle in and out of the Inner Harbor. Throughout the forenoon the air was full of their melodious whistling. Noted many handsome, showy, black and white old drakes. There were many, also, of the seal-brown-headed females. There

were also Red-breasted Mergansers. Snow Buntings were on and off the beach with the Horned Larks. There was a flock of Redpolls in the beach grass. Herring and Kittiwake Gulls were dropping mussels and Black-backed Gulls uttered their raucous notes."

On January 28 I was on the beach from 11 A. M. to 3.30 P. M. It was cloudy but not cold. Some fine snow fell. There were perhaps two inches in the beach grass and over the sand and pebbles of the upper beach. But from high-water mark down to the tide which had turned, the snow (or better, slush) was deeper — the result of the last high tide. It lay in patches everywhere, while in the water there were small pieces of floating ice. There were relatively few bare or semi-bare spots on the beach that seemed fit for shore birds. "As usual, I saw the three Sanderlings and the Red-backed Sandpiper. It was good winter weather last week. The 23d was fair and colder than the 22d and the rest of the week was wintry, though not excessively cold. As I got along the beach to the sandspits where it broadens, there were the three Sanderlings. They were on a piece of bare sand where a little inlet following the falling tide ran into the sea. In this icy water they waded belly-deep. After a few minutes they flew down the beach but soon lit. Presently the Red-backed Sandpiper, uttering his note, flew close by me and with a free flight continued down the beach and lit with the Sanderlings. (The Sanderlings show a tendency to keep together, while the Red-back feeds in their neighborhood or not, as it happens.) The three Sanderlings soon flew again still farther down the beach, leaving the Red-back alone. Later he, too, flew in the same direction. But after two or three minutes he came back, flying freely and fairly high above the beach, and with a great circle lit close beside me, (within three or four yards) seeming curious of me. He was very nervous and full of little fitful starts. After two minutes he flew, and making a great sweeping curve high in air dashed off over the breakwater and across the neck, apparently down into the grassy flats on the Inner Harbor side." (It may be said here that beach birds in Plymouth Harbor have a wide range of choice as to feeding *loci* for, as already remarked, a good deal of the outer beach is exposed between tides, particularly where the water shoals, while on the Inner Harbor side there is more or less grassy shore and out in the water are the very extensive

clam flats which remain bare longer than the outside beach. But in very severe weather the Inner Harbor freezes over and the flats are covered as long as the extreme cold lasts.)

"I went to the place on the beach where I saw the Sanderlings and the Red-backed Sandpiper together and found their little foot-prints in the slush. The whole beach up to high-water mark was nearly all snow and slush. As I returned up the beach two hours later from the Spindle, the aspect of things had become decidedly wintry. The incoming tide dashed with a subdued crash against the shore the thousands of pieces of floating ice. There was now nothing but snow up from the advancing water's edge. The bare sand had been covered by the rising water. But away up on the beach where the exposed sand and pebbles had withstood longest the encroaching tide, I naturally looked for the beach birds. Horned Larks were plentiful here and I soon found the Sanderlings. The three flew from the beach ridge — from the line of snow-covered pebbles above high-water mark. Found their tracks here — also those of Horned Larks. Apparently the birds had been at the exposed dry brown seaweed, for the tracks of both species had almost trodden down the snow. I noticed also that empty fresh mussel shells recently dropped by the gulls had been visited by both Sanderlings and Horned Larks. A very little of the "meat" remained in the shells — which may have made it worth the little birds' while."

The week of January 28 was very cold at its end. The thermometer stood at 46° at noon on the 30th and 31st. A little snow fell during the night of the 31st, but melted the next day (February 1) when an easterly fog came in from Cape Cod Bay. Late on February 1 the temperature was 32°. Friday, the 2d, was colder, and in the evening very cold. On the morning of the 3d it was 4° below zero down town in Plymouth, while at the Head of the Beach (our station) it was 2° above. It was the coldest weather of the winter to date. February 4 was the coldest Sunday of the winter so far, and practically all of the Inner Harbor was frozen over, making it hard for the Black Ducks to get food.

"I went down the beach this Sunday morning under favorable conditions, for it was low water and much of the flats on the outside were exposed, making a mixture of a good deal of bare sand

and plenty of slush-snow, together with ice in patches mixed in with water in pools and little estuaries. Where the flats made the beach the broadest, there were many Gulls and also two Sanderlings and farther on the third Sanderling, and still farther on the Red-backed Sandpiper."

On February 5 it snowed hard in the morning and the storm lasted practically all day. In the morning a Black Duck flew in through the driving snow and went up on the hill where later it was started out from under a pine where apparently it had taken shelter from the storm. Early on the 6th it was 16° above zero. The weather cleared beautifully and the day was sunny, with scarcely a cloud. On the morning of the 7th the weather was very raw changing to rain. "February 11. Sharpest weather of winter. Glass showed zero in the morning, and 4° above at 8 A. M., and 10° above at 3.30 P. M. It was 4° below zero at Sampson's store and 10° below early at Bradford's Corner. A bitter wind on the beach, although a sunny day. Ducks were in all day (up on the grassy shore) at the cove where Eel River enters the Inner Harbor. In the sunny lee of a shooting stand I found an Ipswich Sparrow, a Horned Lark and a Song Sparrow. The beach flock of Redpolls were in the beach grass and a few Snow Buntings on the outer beach. There was no sign of Sanderlings or Red-back; but this does not prove anything, for I did not go down the beach as far as the flats—besides the tide was coming in and the beach proper was absolutely all snow and ice."

February 12, 13 and 14 were very rough days. The weather was cold. It was 6° below in Plymouth on the morning of the 13th and 10° below in North Carver near by. The last three days of the week were milder. February 18 was beautiful, sunny and mild. "Went to the beach which was broad at low water. On a little spit at the usual place were two Sanderlings and the Red-Back. The three were together and were very fearless and we got close to them. They seemed plump enough after the rough weather of last week. The Red-back picked into a fresh lump of green eel grass. The Sanderlings ran nimbly about, heel-deep in the gentle water, and steadily picked into it, evidently getting food. The beach is practically clear of snow and ice again, but the whole expanse of the Inner Harbor except close down to the Spindle is frozen tight as a drum."

The week of February 18 was much milder than the week of February 11. There was a hard rain on the night of the 23d. Went to the beach on the 25th. The Inner Harbor was still frozen over for the most part, though there was a good deal of open water toward the mouth. "The tide was coming in and the outer beach was getting well covered. Up on the dry, pebbly crown of the beach, found two Sanderlings. I got quite close to them. They stood motionless in the sunlight, and their whole aspect seemed almost to indicate that, having been deprived for a time of their feeding ground by the tide, they were calmly (and quite at their ease) waiting for the water to fall again and give them another chance to go to feeding. By way of contrast: the cold wave and consequent tight condition of things has seemed to affect these little Sandpipers less than the Black Ducks which, having lost their feeding grounds by the freezing of the Inner Harbor, have become very lean and weak and are being fed by people. Two hours later on my way back up the beach I passed these two Sanderlings at the same spot on the beach ridge — still motionless and tame. I went very close to them and they watched me sharply but did not fly."

I did not see the Red-backed Sandpiper on February 25 and never saw him again.

The week of February 25 was rather mild, but on Sunday, March 4, it began snowing in the morning and continued steadily all day and heavily by dark (the wind now being northeast,) and lasted through the night and practically all of the 5th, with a strong gale which made a big surf and drifts that stopped the street cars. But the temperature was not low. Under the hill where Eel River flows into the Inner Harbor the Black Ducks were massed — literally packed — on the snowy surface of the field. This storm caused unusual, snowy conditions in Plymouth and on the Upper Cape. Higher drifts are rarely seen in Barnstable and Sandwich. It did not, however, "clear off cold." On March 10, Mr. T. W. Graves was on the beach in the afternoon at low water. He saw three beach birds — one Sanderling and two duller individuals (Red-backs?).

On March 11, I was on the beach at high tide. It was completely, iced up and there were the beginnings of an ice wall. Saw no beach birds. The snowy conditions following the storm of March 4 and

5 soon passed and the rest of the month was rather even weather, with not a low temperature. On March 25 I found that Piping Plovers had arrived on the beach, but I saw neither Sanderlings nor Red-backs.

April 1 was warm, sunny and springlike. "Many Geese are going over the beach and I find that the numbers of Piping Plovers have increased since March 25. Saw two Sanderlings which may or may not have been the birds of last winter."

52 Cedar St., Malden, Mass.

SEQUESTRATION NOTES.

BY JOSEPH GRINNELL.¹

THERE is every reason to believe that the voices of birds have been subject to a process of evolution which has led from the simplest beginnings to a condition which is rather complicated in the higher present-day species. The first sounds uttered by primitive birds were doubtless entirely of an incidental nature, due to expulsion of air under stress of pain or fear, or simply of physical impact. According to one theory (Witchell, 'The Evolution of Bird-Song,' London, 1896) the first specialization accompanied combat and involved a meaning of defiance or intimidation; from this it was an easy step to notes conveying the idea of alarm to other individuals of the same species.

Whatever the course in the early development of bird voices, it is obvious to any field student that in the higher existing birds an often very elaborate system of cries or calls obtains, with an associated wide range of meaning; as witness the Titmouses and Ruby-crowned Kinglets. Some of the meanings, in certain species, have been demonstrated beyond all question of doubt. The less obvious meanings will have to be worked out by slow process, and exceeding care be taken to avoid mere guess-work.

¹ Contribution from the Museum of Vertebrate Zoölogy of the University of California.

A seemingly adequate method of deciding upon the meaning of bird voices is to note as accurately as possible (1) the exact nature of the sounds produced in all particulars, and at the same time (2) the behavior of the bird when uttering each kind of note, and (3) the conditions obtaining with respect to all extraneous factors such as relate to activities of other individual birds in the vicinity, other animals, cover, and forage. The degree of reliance upon the inferences from such observations will increase with the number of times these observations are repeated. The final and satisfactory explanation will not be forthcoming at once, though it is well to hold whatever meaning presents itself even from the outset as a tentative hypothesis.

Some years ago the attention of the present writer became directed to the behavior and notes of certain non-flocking passerine birds as exhibited during the winter season. Dearth of other ornithological features of interest at that season was probably the circumstance which favored the development of the following ideas. The particular class of notes here to be considered are those of the category commonly called "location" or simply "call" notes, and are uttered at irregular intervals by certain birds when foraging singly under normal conditions.

To be more explicit, the birds in the writer's experience especially concerned are the Ruby-crowned Kinglet (*Regulus calendula*) and Audubon's Warbler (*Dendroica auduboni*). The common winter call-note of the former is the familiar rachety, tone-less noise, of three or more sections or syllables. The usual call-note of the latter is the rather sharp single syllable, *tsip*. The notable thing with both species is that their notes are uttered at rather frequent intervals, though irregular ones, by each individual as it forages *alone*. There are often to be heard in the distance, many trees away perhaps, other individuals of the same species; but a point of importance here is the essentially non-flocking habit in both the species under consideration.

I am aware that Ruby-crowned Kinglets do occasionally assemble to a limited extent in winter; for example when "mobbing" an owl. Or, late in the afternoon, as many as five or six individuals may be found in the same tree on a sunny upper hill-slope, especially if the trees be scattering. Also, Audubon's Warblers sometimes collect

in numbers up to a dozen or more in one tree, such as a blossoming eucalyptus, or in a clump of fruiting *Rhus laurina*. But the individuals in all such gatherings show themselves to be thoroughly independent of one another; each goes his own way; and there is, indeed, frequent evidence of friction or conflict of individual interests. There is no indication of coördination of movement, as with truly flocking birds: no individual advantage is gained by the gathering.

Observation of any one Ruby-crowned Kinglet under the usual winter-day conditions in southern or west-central California, shows it to be almost continually intent upon its search for insects. Its mode of search, and the category of insects which its equipment fits it to make use of, direct its forage course as a rule through thick leafy terminal foliage of evergreen trees and shrubs, less generally, perhaps, among the stems of willows and alders, where, however, there are usually left-over, curled-up leaves, and plenty of crannies behind buds and in clefts of forking twigs, to harbor small insects. But insects are relatively scarce in winter, increasingly so as the season advances; and the Kinglet's scrutiny must be rapid. Each individual Kinglet *must cover much territory in limited time* in order to gather the food in sufficient quantity.

As it thus forages, each Kinglet every now and then utters its note, or series of notes. Another individual, or others, may be heard from time to time in the distance, but I have failed altogether to receive the impression that two or more birds "answer one another." My experience is that they most certainly do *not* come *towards* one another as the result of such calls. And here the idea presents itself, logically, that these notes serve to keep the foraging birds *apart*: they are *sequestration notes*.

The nature of the conditions which call forth this category of notes, which makes them of *use* in the struggle for existence on the part of the species, would seem to me to be as follows. The Kinglet is a foliage forager and is most of the time within or in close reach of adequate cover; hence for the most part it is safe from both aerial and terrestrial predators. It relies for food upon small insects, mainly stationary, which in the winter season are not abundant, sometimes exceedingly scarce, as shown by occasional periods when some of the birds starve; the Kinglet cannot dig after its

insects or uncover them, but must look for them in plain sight; it must scrutinize a large area of leaf and twig to find enough, and it must *avoid duplicating territory that its neighbor Kinglet has scrutinized*. In other words it is of critical need that the individuals of a species whose food is of this nature, and must be gotten in this way, be continually *spaced out* over the available food producing territory. Two or more individuals must not follow each other's paths or look over the same ground, at least until there has been time for insect life to move about again.

With Audubon's Warbler the conditions are very much the same as with the Ruby-crowned Kinglet, save that the forage beat of the former lies, as a rule, in more open trees and bushes, or on the outer surfaces of masses of foliage. The *tsip*-notes are uttered seemingly for the same general purpose, to keep neighboring individuals from duplicating territory. With both the Warblers and the Kinglets, it is not uncommon in winter to see two individuals, which may happen to encounter one another in the same tree, assume a hostile manner of behavior and tone of voice. The latter consists in each case, of the same sort of expression as the sequestration note, but uttered with more emphasis. In the case of male Kinglets, there are flashes from the unfurled coronal, and one of the birds quickly puts the other to flight; each is soon pursuing separate forage routes in different directions.

In the case of the Audubon's Warblers, again, it is quite true that two or more individuals often enter into loose membership in the roving aggregations of birds which travel about the open country in winter and include in their number, bluebirds, certain sparrows and even pipits. And also one often encounters a number of Audubon's Warblers, not in company of other birds, trailing along in the same general direction, with indications that they are trying to keep in loose contact with one another. And here it is possible a shade of meaning in their voices invites collectivity. Indeed one can conceive of a note being both centrifugal and centripetal in meaning, the latter to a given radius, the former beyond. But now our discussion has departed into the realm of speculation.

In thus assigning the function of sequestration to certain notes of certain birds, the writer has placed confidence in an accumulation of impressions received during a number of years of observation.

The species concerned are among our commonest everyday winter birds. Verification of this explanation, or the refutation of it, should be easy to secure on the part of persons who are interested in the natural history of living birds; for there are many such nowadays, in excellent position to make accurate observations, and to make from these valid inductions.

Museum Vert. Zool., Berkeley, Calif.

ON *PROCELLARIA ALBA* GMELIN.

BY LEVERETT MILLS LOOMIS.

THE technical name *Procellaria alba* has long been a stumbling-block in the way of nomenclators. It was proposed by Gmelin in 1789 in Volume I, Part II (p. 565) of his edition of Linnæus's 'Systema Naturæ.' The following is Gmelin's description:

"Pr. ex fusco nigra, gulæ area, pectore, abdomine et crisso albis, rectricibus [tectricibus] caudæ inferioribus ex cinereo et albo mistis.

White-breasted Petrel. *Lath. Syn.* III. 2. p. 400. n. 6.

Habitat in insulis Turturum et nativitatis Christi, 16, pollices longa.

Rostrum nigrum; cauda rotundata; pedes ex atro fuscis; digiti anteriore dimidia sui parte cum membrana connectente nigri."

From the above, it is apparent that Gmelin based his *Procellaria alba* upon Latham's White-breasted Petrel, the description of which reads as follows:

"LENGTH sixteen inches. Bill an inch and a half long, hooked at the tip, and black: the head, neck, and upper parts of the body, dusky brown, nearly black: on the throat a whitish patch: breast, belly, and vent, white: under tail coverts cinereous and white mixed: tail rounded at the end: legs black brown: the fore part of the toes half way black; the outside of the exterior toe the same for the whole length: webs black: spur behind blunt.

Inhabits *Turtle and Christmas Islands*. In the collection of Sir *Joseph Banks*."¹

¹ General Synopsis of Birds, Vol. III, Pt. 2, 1785, p. 400.

During his second voyage (1772–1775), Captain Cook discovered an island “situated in latitude $19^{\circ} 48'$ South, longitude $178^{\circ} 2'$ West,” which he called Turtle Island.¹ The position given agrees well with that of Vatoa or Turtle Island of the Fiji group, lying in latitude $19^{\circ} 49' 11''$ S., longitude $178^{\circ} 13' 38''$ W.² It is highly probable that this island is the Turtle Island mentioned by Latham.

Christmas Island of the Fanning group in the Central Pacific was discovered by Captain Cook during his third voyage (1776–1780). In narrating the circumstances of its discovery, Cook remarks: “As we kept our Christmas here, I called this discovery Christmas Island. I judge it to be about fifteen or twenty leagues in circumference. It seemed to be of a semicircular form; or like the moon in the last quarter, the two horns being the North and South points; which bear from each other nearly North by East, and South by West, four or five leagues distant. This West side, or the little isle at the entrance into the *lagoon*, upon which we observed the eclipse, lies in the latitude of $1^{\circ} 59'$ North, and in the longitude of $202^{\circ} 30'$ East, determined by a considerable number of lunar observations, which differed only $7'$ from the time-keeper; it being so much less.”³

In acknowledging the sources of his information, Latham says in the preface of his ‘General Synopsis of Birds:’⁴ “Among these [collections], the magnificent one at *Leicester House*, formed by Sir *Ashton Lever*, ought to be particularly mentioned; as likewise the favours received from the inspection of numerous subjects, the produce of the last and the former voyages to the *South Seas*, in the possession of *Jos. Banks*, Esq.; P. R. S. Soho Square.” This statement coupled with the statements in Latham’s description (“Inhabits *Turtle* and *Christmas Islands*. In the collection of Sir *Joseph Banks*.”) makes it clear that at least one of the original specimens of Latham’s White-breasted Petrel was obtained during Cook’s sojourn at Christmas Island.

Happily, I have before me two unworn specimens of a Gadfly Petrel (67317; 67331 U. S. Nat. Mus.) taken by Dr. Thomas Hale

¹ A Voyage towards the South Pole, and Round the World, 4th ed., Vol. II, 1784, p. 24.

² Bowditch, American Practical Navigator, 1906, p. 257.

³ A Voyage to the Pacific Ocean, Vol. II, 1784, p. 189.

⁴ Vol. I, p. iv, footnote.

Streets, U. S. N., on Christmas Island, Fanning group, in January, 1873, and identified by Dr. Coues and Mr. Ridgway as '*Æstrelata*' '*parvirostris* (Peale),¹ the type specimen of which was at hand for comparison.

Below is an abridged description of the two Christmas Island specimens:

Length of the skins about 14.4 inches; length of commissure fully 1.5 inches; head, neck, and upper parts of body brownish black, becoming browner on forehead and jugulum; wings and tail more decidedly black; throat with a white patch, more or less obscured by the superficial dark color prevailing elsewhere on the fore-neck; breast and abdomen white; lower tail-coverts white and cinereous mixed; tarsi yellowish brown; toes and webs chiefly yellowish brown basally, and black terminally; bill black.

From the foregoing description, it is seen that the characters of Dr. Streets's specimens agree well with those set forth in Latham's description, quoted above. The coloration of the plumage coincides, and also the length of the commissure. That Latham measured the commissure, and not the culmen, is revealed by the length of bill given by him in species now well known; for example, 'bill is two inches long' in the 'Fulmar Petrel' (*Fulmarus glacialis*) and 'three quarters of an inch in length' in the 'Fork-tail Petrel' (*Oceanodroma furcata*). The only disagreement between Dr. Streets's specimens and Latham's description occurs in the color of the tarsi, the light color in the specimens disagreeing with the 'black brown' in the description. The color of the tarsi, however, is an unreliable character unless determined in life, or soon after death; for light tarsi sometimes become dark in drying, as in certain specimens of *Pterodroma phaeopygia* and *Pterodroma inexpectata*.

It seems reasonable to conclude, from the evidence presented, that the White-breasted Petrel of Latham, *Procellaria alba* Gmelin, and *Procellaria parvirostris* Peale relate to one and the same species, which according to current rules of nomenclature should bear the name of *Pterodroma alba* (Gmelin).²

¹ Cf. Streets, Bull. U. S. Nat. Mus. No. 7, 1877, pp. 8, 30; Man. N. A. Birds, 1887, p. 65.

² Other authors have sought a solution of *Procellaria alba* Gmelin in *Pterodroma incerta*, *P. neglecta*, and *P. 'arminjoniana'*. Cf. Coues, Proc. Acad. Nat. Sci. Phila., 1866, pp. 143, 144, 147, 194; Salvin, Rowley's Orn. Misc., Vol. I, 1876, p. 234, Cat. Birds Brit. Mus., Vol. XXV, 1896, p. 412; Godman, Monogr. Petrels, 1908, p. 226; Mathews & Iredale, Ibis, 1913, p. 231; Brabourne and Chubb, Birds S. Amer., Vol. I, 1912, p. 31.

To the specialist in the Tubinares, changes in specific names, as above, and in generic names, as *Æstrelata* to *Pterodroma* and *Daption* to *Pterella*, are intellectual stimuli rather than handicaps. But to the general student of ornithology instability of names has become a positive hindrance, from which our present nomenclatural rules afford no immediate relief, as is evidenced by the long lists of proposed changes that appear from time to time in 'The Auk.'¹ The remote date of the starting-point of our present-day nomenclature is the chief obstacle to the stabilization of bird names. The combined efforts of nomenclators since the adoption of the law of priority have failed to fathom the depths of the zoölogical literature of the past one hundred sixty years. Obviously, if we could abandon this bottomless pit, our task would be lighter. An opportunity is offered in the projected 'Systema Avium.' After the joint committee of the ornithologists' unions has done its utmost under the existing rules, and published the results, a new starting-point could be set for ornithological names, namely, the date of publication of the 'Systema Avium.' Should other names be required thereafter, it would be the province of the joint committee to sanction the coining of new names, letting "the dead past bury its dead." When the other departments of zoölogy have been set in order, it will be time enough to consider harmonizing zoölogical nomenclature as a whole.

It should be emphasized, that the number of bird genera to be recognized is a matter of classification, and not of nomenclature. Monographers, according to temperament, will differ respecting the number to be accepted, but it is believed that in the end simplification will prevail over complication. Any classification that we may adopt must be largely arbitrary. A natural system is 'a dream of Utopia.'

California Acad. Sci., San Francisco.

¹ It seems again necessary to call attention to the fact that the changes listed in the April issue of 'The Auk' are *not* nomenclatural changes, but changes due entirely to questions of *ornithology*. [Ed.]

NOTES ON SEVEN BIRDS TAKEN NEAR CHARLESTON,
SOUTH CAROLINA.

BY ARTHUR T. WAYNE.

THE following observations were made for the most part near my home during the late summer and early autumn of 1918, and in a radius of about two square miles. Trips were made into this area almost daily regardless of heat.

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER.—Since I captured the first specimen of this bird on October 8, 1912 (Auk, XXX, 1913, 273-274), I procured an additional specimen—a young female on September 3, 1918. This bird was shot in an almost impenetrable jungle of elders and viburnum bushes in very low land and was feeding upon the berries of the latter bushes in company with a few Alder Flycatchers (*Empidonax traillii alnorum*).

Among the hundreds, I may say thousands, of Green-crested Flycatchers (*Empidonax virescens*) that I have closely observed during the seasons of migration in South Carolina, Georgia and Florida, hoping to detect *E. flaviventris* among them, the two birds above mentioned are the only ones I have ever seen or taken during the past thirty-five years of almost uninterrupted collecting and close observations of birds. The Yellow-bellied Flycatcher is a very rare bird in the South Atlantic States.

Progne subis subis. PURPLE MARTIN.—During the early spring of 1917—the month of March, I think—an albinistic male bird of this species made its appearance at a martin house of my neighbor, about a mile away from my colony of martins, and raised its brood of young. The following year the same bird arrived sometime in the latter portion of February, and it could be noticed at a glance that there was very much more white in its plumage than during the previous year. This bird paid several visits to my martin house and I was in hopes it would mate with one of my birds and breed, but in this I was hoping against hope, because a bird goes back to its ancestral home and cannot be localized, except from the egg. This beautiful bird mated, and its mate was setting on a full complement of eggs, when on the morning of May 1, 1918, the male was picked up dead at the foot of the martin house and sent to me by Mrs. Isaac Auld. Upon preparing the specimen I could find no signs of disease nor were there any shot holes in the bird, the plumage being perfect and not a feather awry, besides it was exceedingly obese.

Although Purple Martins almost invariably arrive in the vicinity of Charleston between February 16 and 22, nest building rarely begins before the end of April.

Dendroica caerulescens caerulescens. BLACK-THROATED BLUE WARBLER.—On August 30, 1918, I saw a bird of this species and, as it was the earliest date on which I had ever seen one in the autumnal migration, determined to obtain it, as the earliest previous records were September 15, 1884, September 13, 1888, and September 13, 1912. Upon securing the specimen, which is a young male, I was surprised to find upon examination a post ocular streak of pure white on each side of head as well as the same color in the loral regions. This discovery led me to procure a few more with the hope of finding others marked in a like manner. On September 21, I shot two young males and on October 7, I again shot another young male. These two birds are similarly marked as in the August 30 specimen although not as pronounced.

The specimen taken October 7, has the white markings confined to the loral and post ocular areas, but there is a white patch on the lower eyelids, which is absent in the other specimens. Upon examining my series of these birds, many of which were taken before 1889, I could find no trace of the peculiarities mentioned above in either adult or young males.

Dendroica caerulescens cairnsi. CAIRNS'S WARBLER.—I shot on October 2, 1918, a specimen of this race which has *fourteen* tail feathers. I have been counting the rectrices of passerine birds ever since 1887 and the number of tail feathers in the Warblers invariably numbered *twelve*, therefore this bird is a novelty.

Seiurus noveboracensis notabilis. GRINNELL'S WATER-THRUSH.—On July 29, 1912, I shot an adult male of this form which has the three outer rectrices on each side narrowly margined terminally on the inner webs with white; I also have a male taken on May 6, 1915, marked in a similar manner, and on August 16, 1918, I took an adult male with two outer tail feathers on each side widely margined terminally, and on the inner webs, with white. Occasional specimens of the Louisiana Water-Thrush (*Seiurus motacilla*) possess this peculiarity as I have already pointed out (Auk, XXVIII, 1911, 488). I have two specimens marked as above.

Grinnell's Water-Thrush is the prevailing form found here, typical *noveboracensis* being a *rara avis* during both migrations. On one occasion during a heavy rain storm one night in September — I think on September 12, 1912 — I saw vast hosts of Water-Thrushes in a swamp near my house on the morning of that day, there being in sight hundreds in the area of a hundred square feet, and I estimated that there must have been certainly twenty-five thousand or even more birds in the portion of the swamp I explored that day, being in water most of the time up to my waist.

Oporornis formosus. KENTUCKY WARBLER.—I shot on August 14, 1918, a young male of this lovely bird which has *thirteen* rectrices. The day on which this bird was taken the thermometer registered in the shade 101° which shows, as I pointed out in 'Birds of South Carolina,' that it migrates during the hottest portion of the summer.

Mimus polyglottos polyglottos. MOCKINGBIRD.—Towards sunset

on September 19, 1918, my wife called my attention to an albino of this bird at our gate and upon my seeing it I went for my gun to procure it, as it was the first perfect albino, of a Mockingbird, I had ever seen alive in my life. Just as soon as the bird observed my intentions, it at once became exceedingly shy and although I followed it until long after sunset I could not even get within range of it at any time. I, however, saw it go to roost in a thick live oak tree in our yard among about eight or ten more birds of the same species; I then set the alarm clock to go off before sunrise hoping to secure it in the morning, which I did, shooting it from one of our fig trees. The specimen is a young male of the year which was undoubtedly raised in our yard, but escaped my notice. It is entirely white with an ashy tinge to all the feathers, and was in moult, the new feathers being pure white.

I have invariably found albinos or albinistic specimens of birds exceedingly shy, this is not because the desire of possession is very keen with the collector, but because albinos are naturally shy. This is the first Mockingbird I have shot since 1879 or 1880, when I collected several for my late friend Dr. Gabriel E. Manigault, to form a group representing Audubon's plate for the Charleston College Museum.

Mt. Pleasant, S. C.

THE STATUS OF THE SUBSPECIFIC RACES OF *BRANTA CANADENSIS*.

BY J. D. FIGGINS.

THE need of specimens of *Branta canadensis hutchinsi* and *Branta c. occidentalis* recently prompted a critical examination of nearly forty specimens of this genus; and while it was not productive of an example that was not more obviously referable to true *canadensis*, it was of interest because of its exciting a doubt concerning the validity of the above subspecific forms. Several of the specimens reveal one or more measurements that are credited to one or the other of the varieties, but the length of the wing or culmen invariably places them well above the limits of either. Besides, it was noted that the color and markings that are supposed to characterize *occidentalis* occur in unmistakable *canadensis* with disconcerting frequency.

Consultation of the several authorities appears to be of scant assistance, other than to reveal an apparent acceptance of the varieties as a means of escaping a troublesome question, or a seeming attempt to defend them upon purely geographical grounds; although this course necessitates a denial of the evidence at hand, questioning of the accounts of authorities of high degree and an appeal to "chances of error" and the "misunderstanding of data."

Although the various authorities disagree to some extent on the measurements of the several subspecific forms, they are unanimous in concluding that *hutchinsi* is smaller than *canadensis* and that *occidentalis* is larger than *hutchinsi*. A critical examination of such statements might lead to the conclusion that *occidentalis* being larger than *hutchinsi*, its measurements would fall within the extremes of *canadensis*. Investigation proves this to be true, if the largest and smallest measurements of the various authors are employed for comparison. Continuing the experiment further, one finds that only .07 of an inch separates the maximum length of the wing of *occidentalis* from *hutchinsi*, according to the early authorities. The statement that *occidentalis* is larger than *hutchinsi*, is, therefore, based on .07 of an inch in the maximum wing measurement — all other wing measurements being within the limits of the latter race.

On page three of 'A Study of a Collection of Geese of The Branta Canadensis Group From the San Joaquin Valley, California,' Swarth states, in a discussion of thirty-six specimens considered as *hutchinsi*, "twenty-five are males." Without an explanation of his reasons, he employs but ten of that sex as representative of the differences he describes on page fourteen. It is, therefore, not unreasonable to conclude that the differences he finds in the minimum and maximum measurements of wing, culmen and tarsus, as compared with the findings of other writers, may be due to the elimination of the remaining fifteen males belonging to the series. It is the present writer's experience that the measurements of the tarsus and middle toe obtained from dry skins are not always satisfactory and reliable and consequently some doubt may be entertained as to the importance of Mr. Swarth's comparisons and conclusions. The same authority shows the number of rectrices in *canadensis* varies from 14 to 20. The variation is the same in

occidentalis, while *hutchinsi* is credited with 14 to 18, the type specimen having but 14. The number of tail feathers is, therefore, of very doubtful significance as a diagnostic character.

There remain then, only the color and markings by which *hutchinsi* and *occidentalis* are supposed to be determined.

Referring to the former, Ridgway (Manual of North American Birds, 4th edition, p. 117) confines himself to the statement that it is "smaller" (when compared with *canadensis*). Grinnell, Bryant and Storer, (Game Birds of California, page 230) say: "Practically the same as Canada Goose but size smaller. . . . The Hutchins Goose is simply a slightly smaller 'edition' of the Canada Goose. . . ."

Quoting Baird, (U. S. P. R. R. Explorations and Surveys, Vol. IX, 1858, p. 766), "In the specimens of Hutchins' Goose before me, I can detect no difference of form from the Canada Goose, excepting in the smaller size and less number of tail feathers."

Coues (Key to North American Birds, 5th edition, Vol. II, p. 904), says "Other individuals run down to wing, 14.75; bill, 1.20; tarsus 2.25; and such probably cannot be distinguished from *minima*, especially from an individual of the latter which happens to have 16 tail-feathers, unless by the color-marks which ordinarily distinguish both *minima* and *occidentalis* from both *hutchinsi* and *canadensis* proper. There is in fact, some question whether Dr. Richardson's original *hutchinsii* type from Melville peninsula, was not what we are now calling *minima*, for it was described; length, 25.00; wing, 14.00; tail, 14-feathered; Breast. . . . all white, etc."; but it might make confusion worse confounded to insist upon the point now."

Again quoting Grinnell, Bryant and Storer, (page 224): "The three subspecies or varieties of 'white-cheeked geese,' (Canada, Hutchins' and Cackling) intergrade with one another, and individuals are occasionally found which cannot be satisfactorily referred to one or the other of these races."

On page 2, Swarth says: "The *hutchinsi* series at hand, (36 specimens), forms a perfect connecting link between *B. c. canadensis* and *B. c. minima*, the gradation between *hutchinsi* and *minima*, in particular being so gradual that several specimens might with equal propriety be placed in either subspecies."

Taking up the color and markings of *occidentalis*, Ridgway

says on page 117; "Lower parts deep grayish brown or brownish gray (often not conspicuously paler than upper parts), abruptly defined against white of anal region; white cheek-patches usually separated by a black throat-stripe, or black mottling on throat; white collar round lower neck usually very distinct."

Grinnell, Bryant and Storer say, (page 225), "The White-cheeked Goose is a large, dark-colored northwestern race. . . ." Baird in describing it states, (page 766) "The name might be taken from the white collar, but for the possibility that this may or may not be always constant."

Coues' description of *occidentalis*, (page 904), is as follows: "Similar to the last, (*canadensis*); of equal size or nearly so, and tail 18-20-feathered. Coloration averaging darker than in the last, on under parts especially, against which the white of anal and crissal region is very well defined. Black of neck bounded below in front by a white half-collar, and white cravat apt to be untied in front making a pair of white cheek-patches. Bill averaging shorter, perhaps never 2.00 along culmen, and tarsus relatively longer. The best samples are well marked; others shade into the common form inextricably."

Referring to Baird's type of *Bernicla occidentalis*, Swarth (page 6), says: "The differences are (1) that the type specimen has a faintly indicated trace of a white half collar at the base of the neck, which none of the Alaskan birds possesses; (2) it has a more nearly continuous line of black spots separating the white cheek patches; (3) it is of a more reddish brown color ventrally. These are all differences which, judging from more extensive series of other subspecies of *canadensis*, may well be due to individual variation, and altogether the Alaskan birds appear to be sufficiently like the type of *occidentalis* to justify the application of that name to the breeding birds of the region where they were secured." Farther on, the same author says: "Of the Alaskan specimens, not one shows even a single white feather at the base of the neck, and while the black throat bar is in three cases faintly indicated by a few black spots, in the remaining five there is not a mark to interrupt the continuity of the white cheek and throat patch. Thus these supposedly characteristic markings are shown to be no more constantly present in the race *occidentalis* than they are in true

canadensis, where a suggestion of such markings occasionally occurs."

This would appear to effectually dispose of *occidentalis* as a subspecific variety. Swarth's contention for a difference in size when compared with *canadensis* is not convincing when he and Baird himself, evidently entertained a doubt as to whether the type specimen is really distinct. The present writer interprets Swarth's description of *occidentalis* as an attempt to justify the continuance of this variation as a subspecies by crediting it as being a more or less resident form inhabiting the Pacific coast from Port Townsend to Prince William Sound, but admits the birds of "extremely dark coloration" are "closer to the range of *minima* and it is fair to believe that these specimens illustrate a step in the gradual transition between the two forms, which probably occurs."

He has shown that the white collar and black stripe on the throat are not diagnostic characters,—being "no more consistently present in the race *occidentalis* than they are in true *canadensis*." The statement that "Of the Alaskan series the Prince William Sound birds are smaller and darker than those of the Sitkan district...." points rather conclusively to gradation through hybridism. It is doubtful if a large number of ornithologists will agree that an unsupported proposal of an *unusual* migration movement warrants assigning such specimens to a subspecific form that makes a second description necessary as a means of coordinating it with a theory.

The literature dealing with the distribution of the genus *Branta* fails to take into account the region lying between Prince William Sound and Bering Sea. This comprises the Kenai Peninsula, Kachamak Bay, Cook Inlet and the great alluvial valley to the northeast, as well as the southern slope of the Alaskan mountains from Mt. McKinley to the Alaskan peninsula. A large part of this territory is ideal breeding ground and to the present writer's personal knowledge, examples of *Branta* are found there in considerable numbers during July, August and September, although no specimens were taken. There are no land barriers that would prohibit these birds crossing from Prince William Sound to Cook Inlet and hence it is not unreasonable to expect that *minima* and *canadensis* and Baird's so-called *occidentalis* interbreed and hence the "variations" and specimens that intergrade "inextricably."

It is now of interest to inquire if the frequently mentioned characters, white collar, black throat-stripe and abrupt termination of the color on the under parts occur in true *canadensis* and to what extent.

Among the Nebraska, Colorado and Louisiana specimens examined by the present writer, three birds, measuring, wing 19.12 in., culmen 2.16; wing 19.10, culmen 1.95; wing 18.55, culmen 2.02, show a sharp, clear-cut line of separation between the white and the color of the under parts. The first exhibits a very narrow half collar. Two specimens measuring, wing 18.75, culmen 2.10; wing 17.65, culmen 2.07, have broad, white collars. One specimen measuring, wing, 19.10, culmen 1.95, is unusually dark on the under parts and others are more or less mottled with grayish brown or brownish gray. In nearly all examples of this character there is a tendency towards abruptness of separation between the white and the color of under parts.

Regarding the black line on the throat, in two specimens it is almost continuous. Others show a pronounced line of mottling. In such specimens the feathers comprising the cheek-patches are invariably tipped with black to a greater or less degree and there is a tendency in such examples towards small wing or culmen measurements, but never both; as for instance, wing 17.70, culmen 2.31; wing 19.10, culmen 1.95, etc.

Three females with wing and culmen measurements within the limits of *hutchinsi* have the under parts typically *canadensis* in color, blending very gradually into the white of the anal region, and are equally referable to the latter race. It therefore, seems probable the variations in color and markings are due to causes other than subspecific differences.

Investigation of dates proves that birds taken in the early fall exhibited far more mottling on the throat, black tipping of the feathers of the cheeks and darker under parts. Such markings lessened in direct ratio to the progress of the season until late April specimens and breeding birds are typical of *canadensis* in every respect. Instead of a line or mottling on the throat, the dark area is reduced in late spring and summer specimens to a small dusky brown, or dusky and white "U" on the chin — in one instance the intermixture of white extends all the way to the bare area between the mandibles. An examination of the feathers compris-

ing the black throat stripe and those surrounding the white area of the cheeks proves that more than two-thirds of their basal length are white, and in summer specimens they are much shorter than in fall and winter birds. The gradual and finally complete elimination of such markings may, therefore, be assigned to *wear* and their absence or presence considered as an index to season, rather than to subspecific variation.

The majority of the specimens examined were received in the flesh, or merely roughed out. These prove that there is a continuous body and upper chest molt during the fall and winter months. By early April the dark or mottled underparts have disappeared and the transition to the white of the anal region is very gradual. Of seven specimens in breeding plumage, none show a trace of the white collar.

All of the specimens examined have a white spot below the eye, varying to some extent, but always present. Others have a few scattered white feathers above the eyes, being in two examples sufficiently numerous to suggest a band of mottling across the crown. One very large male exhibits an unbroken oval spot of white on either side of the crown, immediately over the eyes, not less than .25 by .50 in extent.

While it would appear to be shown that the dark under parts, black throat-stripe and white half-collar credited to the other subspecific forms also occur in *canadensis*, they are probably never so pronounced as in *minima*, unless the latter happens to be a light hybrid, similar to the type of *occidentalis*.

Finally, it is pertinent to inquire if the variations in markings and color noted above occur in other species of geese. In *Chen caerulescens* it is found that there are far greater differences in the markings about the neck and under parts than are shown by a comparison of *canadensis* and *minima*; and as in Swarth's comparison of the measurements of tarsi in *Branta*, it so happens that the tarsus of the smallest of five specimens exceeds by a full quarter of an inch that of the largest. One example shows the under parts, including the basal third of the neck and entire under tail-coverts to be a dark brownish gray or grayish brown, all the feathers being edged with tawny. The ordinary sooty color of the lower neck and chest is absent with the exception of a few scattered feathers at the

sides, but is present on the middle portion of the neck, mottled with white and extending to and over the crown, where it is replaced by the usual head markings. This bird is a female, taken in late March and moulting.

In *Anser albifrons gambeli*, the breast of one specimen is fully half black. A second is devoid of the slightest trace of black, the entire under parts of this bird being an unbroken, pale creamy-buff from neck to tail. The usual white of the forehead and lores is restricted to a narrow band, in no place exceeding .25 in width and does not extend to the gape. This white area is heavily mottled with black and the chin is the uniform color of the throat. Two examples intergrade. Of the four specimens examined the light phase above described has the shortest wing (15.62) and culmen (1.97), and the *longest* tarsus, (2.75).

CONCLUSIONS.

That it is not possible to identify a specimen as *hutchinsi* without disregarding strong evidence of its being either true *canadensis* or *minima*. That such identification is largely a matter of personal preference — so-called *hutchinsi* being merely examples of *canadensis* that present one or two measurements below the minimum or specimens that are the result of a cross between *canadensis* and *minima*. *Hutchinsi* is credited as occupying approximately the same range as *canadensis* but extending northward on the Pacific coast to Point Barrow and Flaxman Island. (See The Canning River Region, Northern Alaska, Leffingwell, page 65, 1919, U. S. Geological Survey Professional Paper 109). Swarth shows that "*hutchinsi*" attains its greatest abundance on the Pacific coast and that his "series at hand forms a perfect connecting link between *B. c. canadensis* and *B. c. minima*, the gradation between *hutchinsi* and *minima* in particular being so gradual that several specimens might with equal propriety be placed in either subspecies."

It appears to be established by several authorities that the breeding range of the representatives of the genus *Branta* overlap and it is the present writer's belief that *hutchinsi* is a hybrid intergrade between *canadensis* and *minima*. Contrary to Swarth's supposition that "we should expect to find at points farther east

but few intergrades and the majority of birds typical of *hutchinsi*," of the nearly forty examples of *Branta* from Nebraska, Colorado and Louisiana, none were found that did not show at least one measurement that exceeded the maximum of *hutchinsi* — all others being well within the limits of *canadensis* and hence referable to the latter. Swarth's conclusion, . . . "We should find here, as is actually the case, vast numbers of typical *minima*, a lesser number of intergrades, and comparatively few typical *hutchinsi*," must, therefore, be viewed in the light of strong evidence of hybridism, rather than subspecific difference.

Authorities agree that the measurements of *occidentalis* are within those of *canadensis* and the number of rectrices are the same. It is shown that the color and markings accredited to *occidentalis* also occur in *canadensis*. Coues evidently questioned the distinctness of Baird's type specimen and shows that it was much smaller than the minimum measurements now assigned to *occidentalis*. Swarth's description: "(2), slightly smaller size, that is, the maximum of *occidentalis* is below the largest *canadensis*. (3) Proportionally longer tarsus," will probably not be taken seriously by most ornithologists and hence, *occidentalis* appears to be without the slightest grounds for subspecific recognition.

It is, therefore, proposed that "*hutchinsi*" and "*occidentalis*" be eliminated as subspecific forms, that *minima* be raised to specific rank and that the occasional "inextricable" examples be recognized as hybrids.

Colorado Museum Nat. Hist., Denver, Colo.

BACHMAN'S WARBLER BREEDING IN ALABAMA.

BY ERNEST G. HOLT.

Plate IV.

THE history of *Vermivora bachmani*, as one of the "lost species," of Audubon holds much of interest to the ornithologist. Discovered at Charleston, S. C., by Dr. Bachman in 1833, the bird was not taken again in the United States until 1886, when Charles S. Galbraith collected a specimen for millinery purposes near Lake Pontchartrain, Louisiana. In the spring of 1887, a specimen was picked up beneath the Sombrero Key lighthouse off the southern coast of Florida. Though these two captures stimulated the efforts of collectors, and the species proved to be common in Florida and Louisiana during migration, it was not discovered breeding until 1897 when Otto Widmann found nests in southeastern Missouri. Subsequently the species has been found breeding near Charleston, S. C., by Wayne, and in Logan County, Ky., by Embody.

As Widmann did not actually find nests in Arkansas, there are records of the breeding of Bachman's Warbler in three states only — Missouri, South Carolina, and Kentucky and it is with considerable satisfaction therefore that I am enabled to add a fourth — Alabama.

The species was not known to occur in Alabama until 1908 (cf. Saunders, Auk, Vol. XXV, pp. 416 and 421, October, 1908), but since 1912 it has been frequently observed in spring by Lewis S. Golsan, in Bear Swamp, near Autaugaville, and on Pine Creek, near Prattville. The bird had never been seen by me until May 25, 1919, when I was visiting "Laurel Pools" in Bear Swamp, southern Autauga County, with Mr. Golsan. An adult male was then observed singing, and a little later I almost ran over a nest in some low blackberry vines beside a path that Mr. Golsan had cut between two of the pools.

The nest, a bulky structure of dead leaves of white or red bay (*Magnolia* or *Persea*), some of which were skeletonized by insects, and herbaceous plant stems, was supported one foot above the

ground by the stems of five blackberry briars, three of which were dead. This loose outer nest, 6 x 7.5 inches x 4 inches deep, was lined with a closely woven cup of fine rootlets and the black skeletons of dead Spanish moss (*Tillandsia usneoides*), 1.75 inches deep by 2 inches in diameter. The nest was situated only 13 feet from the edge of the largest pool, in a small burned-over area covered with a thin, new growth of blackberry briars. The burn was surrounded by the virgin swamp growth of *Pinus taeda*, *Magnolia virginiana*, *Picris nitida*, *Ilex coriacea*, *Persea* and other hydrophytic vegetation.

The nest contained four eggs, three of them pure, glossy white, the other with a dozen minute dots of light brown, mostly about the larger end; all were tinted faint salmon pink by the yolks. The measurements in millimeters are: 15 x 12, 16 x 12.5, 16 x 12.5, and 16 x 13. There were only a few blood vessels in the eggs showing that incubation had only fairly begun.

The female warbler was sitting on the nest next morning (May 26) when we came to collect it and allowed us to approach within 6 feet, then it fluttered away among the low bushes. I collected the bird to make identification absolutely certain. The male was seen singing nearby but it was never observed to come lower than 25 or 30 feet above the ground. I agree with Embury, Wayne and Widmann that the song bears a great resemblance to that of the Chipping Sparrow.

This nest and set of eggs is now in Mr. Golsan's collection and the female warbler has been presented to Dr. A. K. Fisher.

Sao Paulo, Brazil.



NEST AND EGGS OF BACHMAN'S WARBLER.

DESCRIPTION OF A PROPOSED NEW RACE OF THE
KILLDEER FROM THE COAST OF PERU.

BY FRANK M. CHAPMAN.

COLLECTIONS received during 1919, by the American Museum from its Peruvian representative, Mr. Harry Watkins, contain fourteen specimens of a Killdeer which breeds on the coast of Peru, at least from Lima to near the Ecuadorian boundary. Killdeer have been before recorded from Peru,¹ from Colombia,² Ecuador,³ Paraguay,³ and Chile,³ but it has been assumed that these birds were winter visitants from North America. It seems, however, not improbable that they were resident birds, as, beyond question, are our specimens from Peru. These represent adults at the beginning and the end of the post-nuptial molt, and young in fresh juvenal plumage and in the down.

This discovery places the Killdeer, distributionally, in the group of Plover to which *Octhodromus wilsonius* and *Ægialitis collaris*⁴ belong and suggests that our northern Killdeer is derived from the South American form. Of *Ægialitis collaris*, Ridgway remarks that South American specimens "much more often (in fact usually) have the cinnamon on head and neck present and also more pronounced,"⁵ and it is in the greater extent of the rusty margins of the upperparts that the Peruvian Killdeer may be distinguished from the North American and West Indian forms. This difference is sufficiently pronounced and, so far as our material goes, constant to warrant the recognition of the Peruvian bird as a well-marked race for which I propose the name

¹ Sci. & Salv., P. Z. S., 1868, p. 176 (Tambo Valley, southwestern Peru); Taczanowski, *Ibid.*, 1879, p. 244 (Pacasmayo).

² Sci. & Salv., P. Z. S., 1879, p. 547 (Medellin).

³ Sharpe, Cat. Bds. Brit. Mus., XXIV, pp. 247, 742.

⁴ In default of material to consider the conclusions in regard to genera reached by Ridgway (Bull. U. S. N. M., 50, Pt. VIII), I follow here the nomenclature of the British Museum Catalogue.

⁵ Bull. U. S. N. M., 50, Pt. VIII, p. 141.

***Oxyechus vociferus peruvianus* new subspecies.**

Subsp. Char.—Smaller than *Oxyechus vociferus vociferus*, agreeing in size with the West Indian *Oxyechus vociferus rubidus*, but in post-nuptial plumage differing from them both in the greater extent of the rusty margins of the plumage of the upperparts and, particularly, of the lesser and median wing-coverts.

Type.—No. 163,083, Am. Mus. Nat. Hist., ♂ ad. (fresh post-nuptial plumage, the outer primary of the nuptial plumage still present), Paletillas, alt. 1550 ft., northeast of Payta, Prov. Piura, Peru, June 22, 1919; H. Watkins.

Description of Type.—Similar in color to *Oxyechus vociferus vociferus* but all the brown feathers of the plumage, including crown, nape, back, scapulars, tertials, etc. margined with rusty or ochraceous; exposed portions of lesser and median wing-coverts rusty. Wing, 160; tail, 91; tarsus, 31.5; exposed culmen, 19 mm.

Description of fresh Juvenal Plumage.—♀ juv., Bequeta, near Lima, Peru, Jan. 22, 1919. Similar to corresponding plumage of *Oxyechus vociferus vociferus*.

Description of Natal Down.—(Two specimens not more than four days old, Paletillas, Peru, June 22, 1919). Similar to corresponding plumage of *Oxyechus vociferus vociferus*.

Specimens examined.—*Oxyechus vociferus peruvianus*. Peru: Paletillas, Piura, 1 ♂ ad., 2 pull. (June 22, 1919); Samate, Piura, 2 ♂♂ ads. (May 30, 1919); Chilaco, Piura, 1 ♂ ad., 1 ♀ ad. (May 27–25); Pilares, Piura, 1 ♂ ad., 1 ♀ ad. (June 16, 1919); Bequeta, Prov. Lima, 2 ♂♂ ads., 2 ♀♀ ads., 1 ♀ juv. (Jan. 22–24, 1919).

Oxyechus vociferus rubidus. West Indies: (Cuba, Haiti, Jamaica, Porto Rico, Grenada), 18 adults representing both sexes and every month but August.

Oxyechus vociferus vociferus. A large series from throughout the United States, taken in every month and representing all plumages.

Remarks.—The seven adult specimens on which this proposed race is chiefly based, were taken in the Province of Piura from May 25 to June 22. All are essentially in the same stage of plumage, having just completed, or nearly completed, the post-nuptial molt, all but one still having the outer one or two primaries of the nuptial plumage. The series shows little variation in color all having the upperparts strongly margined with rusty, as in the type. These birds are comparable with August and September specimens from the eastern United States. The latter often have the upper parts

marginated with rusty, but never, so far as my observations go, to the extent shown by the Peruvian bird. Some comparable North American birds, on the other hand, show almost no trace of this rusty margining, and, representing the extreme of difference between *peruvianus* and *vociferus vociferus*, may perhaps indicate the type of coloration toward which the latter is diverging. That this divergence is of comparatively recent occurrence in the life of the species, is suggested by the inconstance of the features which characterize it, and also by the fact that in juvenal plumage the Peruvian and North American forms are alike.

The West Indian form appears to differ from true *vociferus* only in size, and consequently, is not intermediate in color between it and *peruvianus*.

As stated above, two downy young but a few days from the egg, were taken at Paletillas, June 22, and we may accept these birds, in connection with the seven adults from the Paletillas region which are completing their post-nuptial molt, as conclusive evidence that the Peruvian Killdeer nests in May and June. But examination of the Bequeta specimens shows that May and June by no means constitute the entire nesting season of the Killdeer in Peru.

Four of the Bequeta specimens, taken January 23 and 24, are adults in the midst of the post-nuptial molt in which wings and tail as well as body feathers, are being renewed. The remaining feathers of the nuptial plumage are much worn and practically without rusty margins; the incoming new plumage is marginated with rusty.

The fifth Bequeta specimen, taken January 22, is in fresh juvenal plumage with portions of the natal down still adhering to the ends of the central rectrices and longer upper tail-coverts. Our collection contains specimens which show that in the Killdeer fragments of the natal down may remain at the end of the central rectrices until the spring following the bird's birth — a surprising fact — but the general condition of the plumage of this Bequeta bird with its fresh, narrowly marginated dorsal plumage, shows that it is a comparatively young bird, exactly similar, indeed, to August specimens of *vociferus vociferus* from various parts of the United States. Consequently, just as the Piura birds prove that in northwestern Peru the Killdeer breeds in May and June, so the Bequeta

birds prove that in central western Peru the Killdeer breeds in December and January.

The localities in question are only about 450 miles apart. I know of no marked seasonal difference between them, and am quite at loss to account satisfactorily for this variation in nesting dates. Possibly the uniform climate, both as regards temperature and rainfall, prevailing on the coast of Peru, militates, among Killdeer, as it apparently does among the Cormorants and Pelicans of the Guano Islands off the coast,¹ against the establishment of a definite breeding season. Or we may have here a case similar to that of the Brown Pelicans in Florida which on the Gulf coast begin to nest in April and on the Atlantic coast in November. Further collections and field studies are required to settle this interesting question

Amer. Museum Nat. Hist., N. Y.

DESCRIPTIONS OF A NEW SPECIES AND SUBSPECIES OF TYRANNIDÆ.

BY CHARLES B. CORY.

***Todirostrum beckeri* sp. nov.**

Type from Base of Serra da Lua, near Boa Vista, Rio Branco, N. Brazil. Male, No. 49,347, Field Museum of Natural History. Collected by R. H. Becker, March 24, 1913.

Description.—Similar to *T. sylvia schistaceiceps* (Sclater) and *T. sylvia griseolum* Todd, but differs from either in the shorter wing, in having the black loreal stripe bordered below by a buffy streak, and above by a conspicuous buffy stripe extending from the base of the upper mandible to above the eye. Base of crown and nape olivaceous; greater wing coverts edged with buffy yellow or pale orange yellow; middle wing coverts tipped with same; lesser wing coverts edged with olive green.

Measurements.—Wing, 45; tail, 30; bill, 13 mm.

¹Habits and Economic Relations of the Guano Birds of Peru, by Robert E. Coker, U. S. Bureau of Fisheries, Proc. U. S. N. M., 56, 1919, pp. 449-511.

Remarks.—I have dedicated this new form to Mr. Robert H. Becker who collected the type specimen.

***Euscarthmus impiger cearæ* subsp. nov.**

Type from Jua, near Iguatu, Ceara, N. E. Brazil. Adult female, No. 50,834, Field Museum of Natural History. Collected by R. H. Becker, August 20, 1913.

Description.—Allied to *E. impiger impiger* Sclater & Salvin and *E. i. inornatus* (Pelzeln), but nearer the latter. This form agrees very well with the description of *inornatus* (a form which I have not seen) as given by Pelzeln, except that Pelzeln describes the abdomen as "*flaviscente indulis*," whereas in *cearæ* the abdomen is pure white. It is probable that on account of the very different environment of the two forms *cearæ* will show other differences in coloration. From *impiger impiger* the present form differs in having the upper parts dark grayish olive (not brownish), crown slightly darker than back; wing bands white; under parts more whitish; abdomen and under tail coverts much purer white, and wing shorter.

Measurements.—Wing, 43; tail, 37; tarsus, 19; exposed culmen, 12 mm.

Remarks.—It should be noted that all of the specimens I have seen from Venezuela (including two from Caracas) and which I assume are typical *impiger impiger* have the ends of the wing coverts (forming the wing bands) practically white, the yellowish tinge mentioned by Sclater being very faint and hardly noticeable. None of the specimens have the wing bands distinctly yellowish white and not at all tawny buff as shown in the original plate or in the plate given in the 'Catalogue of Birds of the British Museum.' *Field Museum Nat. Hist., Chicago.*

THE THIRTY-SEVENTH STATED MEETING OF THE
AMERICAN ORNITHOLOGISTS' UNION.

BY T. S. PALMER.

THE Thirty-seventh Stated Meeting of the American Ornithologists' Union was held at the American Museum of Natural History in New York, November 10-13, 1919. On account of the epidemic of influenza which prevailed in 1918, this meeting was the first public one held for two years and the first one since the war. Naturally the attendance was above the average and the program more extended than usual — in fact the meeting continued beyond the formal sessions and with the excursions occupied most of the week.

Attendance. The total attendance of Fellows, Members, Associates and visitors was about 125. The Fellows present numbered 28, as many as attended the New York meeting of 1913 and the largest number at any meeting in the history of the Union. Among those present were three of the nine surviving Founders, Dr. J. A. Allen, Chas. F. Batchelder, and Dr. A. K. Fisher and ten members elected at the first meeting in 1883: seven Fellows; Prof. W. B. Barrows, Ruthven Deane, Dr. Jonathan Dwight, Dr. Geo. Bird Grinnell, Dr. T. S. Roberts, John H. Sage, and W. E. Saunders; two Members, E. T. Seton and C. H. Townsend; and one Associate; H. K. Coale. The Union had the unusual pleasure of entertaining one of its Honorary Fellows, William Lutley Selater, of London, well known as the editor of 'The Ibis' and the author of many important publications on ornithology. Thirty-five years ago the Union had the pleasure of greeting Mr. Selater's father, the late Dr. P. L. Selater, who with the late Howard Saunders was visiting America and attended the second meeting in New York, in 1884. Among others who came from a distance were two representatives from the region west of the Mississippi River, Dr. T. S. Roberts of Minnesota and H. S. Swarth from California; four from Canada,

J. H. Fleming, W. E. Saunders, P. A. Taverner and Hoyes Lloyd; and several Members and Associates who had recently returned from service in France.

Business Meetings. The first day was devoted to meetings of the Council, which lasted from 10.30 A. M. to nearly 4 P. M., and two evening meetings, one of the Fellows at 7.40 P. M. and the other of the Fellows and Members at 8.30 P. M. At the brief meeting at 7.40 P. M. the two vacancies in the list of Fellows were filled by the election of Joseph Harvey Riley of the U. S. National Museum and Alexander Wetmore of the Biological Survey, and two amendments to the By-Laws were adopted. One of these amendments in Art. V, Sec. 4, provides for the restoration of delinquent members upon payment of dues without the delay and formality of reelection, and one in Art. VII, Sec. 3, provides more specifically for the acceptance and administration of trust funds.

At the meeting of the Fellows and Members called to order by the President, 25 Fellows and 13 Members were present. Following the roll call and the reading of the minutes of the previous meeting, the report of the Secretary was presented. This report showed a net gain of 71 members during the year. In November, 1918, the total number of members was 953 while the present membership was approximately 1024, distributed as follows: Fellows, 48; Retired Fellows, 3; Honorary Fellows, 19; Corresponding Fellows, 63; Members, 84; and Associates, 807. During the year the Union lost 16 members by death, 14 by resignation and 39 by delinquency. The deaths (counting six which occurred in the previous year, news of which was delayed) included those of one Fellow, one Honorary Fellow, two Corresponding Fellows, one Member and eleven Associates (see p. 125). Two of these members, Mrs. Olive Thorne Miller and Dr. Henry K. Oliver were the oldest members and the latter was the only American ever connected with the Union who had practically reached the age of 90.

The Secretary reported that notices of the last annual meeting had been published in 'Bird Lore,' 'The Condor,' and 'Science' and brief summaries had been sent to several foreign journals including 'The Emu,' 'The Ibis,' and 'Nature.' A report of the meeting had also been sent to all the Corresponding Fellows, who could be reached under existing restrictions on foreign mails.

A revised list of the members in military and naval service had been published in the January 'Auk' and, with additions since received, the total number in active service was about 90. So far as known only four of these had lost their lives in military or naval service. During the year efforts to induce libraries to complete their sets of 'The Auk' had been continued and resulted in the sale of a number of back volumes and copies of the Indexes. A census of complete sets of 'The Auk' had been undertaken and the reports thus far received, indicate that the total number of complete sets now in existence in public and private libraries does not exceed 150.

The report of the Treasurer showed that the finances of the Union were in a highly satisfactory condition with a substantial balance of \$1018.08 in receipts over current expenses and a total surplus including income from life memberships and other invested funds of more than \$7000. Through a provision in the will of the late William Brewster a bequest of \$2000 has been made to the Union and this sum, left in trust, will be received in due time.

As a result of the election of officers the present incumbents were reelected as follows: President, John H. Sage; Vice Presidents, Witmer Stone and George Bird Grinnell; Secretary, T. S. Palmer; Treasurer, Jonathan Dwight; Members of the Council, Ruthven Deane, William Dutcher, Joseph Grinnell, Frederic A. Lucas, Harry C. Oberholser, Charles W. Richmond, and Thomas S. Roberts.

On recommendation of the Council, one Honorary Fellow, 15 Corresponding Fellows and 247 Associates were duly elected (see p. 118). In the election of 5 Members, Massachusetts was represented by two and New York, Ohio, and Missouri by one each, the successful candidates being John A. Farley, Thos. E. Penard, Dr. A. H. Wright, Prof. F. H. Herrick and Harry Harris.

The Committee on Biography and Bibliography through its Chairman, Dr. Palmer, presented a brief verbal report showing progress in several lines of work. The 'Index of Portraits of Ornithologists' now contains entries of more than 800 individuals nearly half of which are those of present or past members of the Union. The list of published letters of Audubon in course of preparation by Mr. Deane is progressing and the author hopes

to have it completed early in the year. Some of the results of the work of the Committee have appeared in the October 'Auk' in Richmond's account of Forster's Edition of Le Vaillant's 'Oiseaux d'Afrique,' Stone's article on 'Jacob Post Giraud, Jr., and his Works', and the list of graves of prominent ornithologists.

From the friends of William Brewster, the Union received a check for \$5200 for a fund to be known as the William Brewster Memorial. This fund will be invested and beginning in 1921, the income will be awarded once in two years, "in the form of a medal and an honorarium to the author of the most important contribution to the ornithology of the Western Hemisphere, during the period named."

Resolutions were adopted expressing the thanks of the Union to the President and Trustees of the American Museum of Natural History, to the officers of the Linnaean Society, to the Explorers' Club, and to the Director and Members of the Executive Committee of the New York Zoological Society for the various courtesies extended during the 37th meeting of the Union.

Public Meetings. The meetings devoted to the presentation and discussion of scientific papers occupied three full days, November 11, 12 and 13, from 10.30 A. M. to 5.30 P. M., with an hour or more intermission for luncheon. The program, given in detail elsewhere, included 40 papers on a wide range of topics. Considerable discussion developed on some of the subjects, but even with long sessions the time was insufficient and several papers were necessarily read by title.

The opening papers each morning were reminiscent in character. On Tuesday and Wednesday were presented the memorial addresses on Lyman Belding and William Brewster and on Thursday a series of three very interesting accounts of the birds observed in France by Messrs. Griscom, Sanborn and Harper. Mr. S. P. Baldwin's paper on 'Bird Banding by Means of Systematic Trapping' was a most original and interesting contribution and elicited considerable discussion. From experiments extending over several years at Cleveland, O., and Thomasville, Ga., he found that certain birds seemed to develop the 'trap habit' and the same bird would enter a trap so often in search of food that it spent much of its time inside the trap. At Thomasville, Ga., the same individual

migrants, as shown by their bands, were caught repeatedly in several successive years, thus showing that they followed identical routes. Mr. W. L. Slater gave a brief account of the British Ornithologists' Union and its work, outlined the plan of the 'Systema Avium' or series of Check Lists of Birds of the principal regions of the world, and submitted a proposal for holding an International Congress of Ornithology in the United States in 1921. The illustrated papers by Dr. Stone on the birds of the Chiricahua Mts., Ariz., and by Dr. Chapman on South American Birds represent the best type of papers — interesting and instructive alike to the layman and the specialist. Technical papers such as those by Mr. Chapin on African Rails, Messrs. Nichols and Griscom on Seaside Sparrows, Mr. Swarth on Fox Sparrows, Dr. Matthew on *Diatryma*, and Dr. Stone on the Use and Abuse of the Genus were interspersed through the program, while habits of birds were discussed at length in the interesting papers by Miss Sherman, Dr. Chas. W. Townsend and Mr. C. W. Leister. Progress in Ornithology in 1919, brought out discussion by a dozen members who reviewed the various phases of activity during the year, and Dr. Grinnell's 'Recollections of Audubon Park' and Mr. Crandall's 'Birds of the New York Zoölogical Park' prepared the members for the trips on Friday.

Thursday afternoon was devoted to a series of six papers illustrated by ten reels of motion pictures. The audience thus had an opportunity of comparing some of the best recent motion pictures among which those of Sage Grouse by Mr. W. L. Finley and those of the Heath Hen by Mr. Norman McClintock were especially notable.

Other Events. On the three days of the public meetings the members and visitors were guests of the Linnaean Society at luncheon which was served in the bird hall on the second floor of the Museum. On Wednesday evening, the annual dinner was held in the Mitla Cafe in the Museum, followed by a reception in the Bird Department where an opportunity was afforded of examining the wealth of material in the study series of birds, and especially some of the recent collections from South America and Africa. On Tuesday evening the Union was entertained at the Explorers' Club, 345 Amsterdam Ave., when Dr. Chapman presented his illustrated paper on South American Birds followed by a conversa-

zione and an opportunity of examining the unique library of works on travel belonging to the Club. On Friday morning, after adjournment of the regular meeting, a trip was made to Audubon Park at Broadway and 157th St., where under the guidance of Dr. George Bird Grinnell, a party of about 20 visited the home of John James Audubon and inspected the room that he used as a study and the one in which he died. The points of interest associated with the adjoining homes of Victor Gifford and John Woodhouse Audubon were explained and a visit was paid to the Audubon Monument and the Geo. N. Lawrence tomb in Trinity Cemetery. At noon about 40 members assembled at the Administration Building in the New York Zoological Park where they were entertained at luncheon. After an explanation by Dr. Hornaday of the Rungius' series of paintings and the wonderful collection of heads and horns of big game, the party was conducted by Messrs. Beebe and Crandall through the bird houses where two hours were spent in examining in life many rare foreign birds, including the Argus Pheasant, Cock of the Rock, Kagu, three Birds of Paradise and many other interesting species. On Saturday some of the members visited the quaint old New York City Marble Cemetery, on Second St., near First Avenue, which contains the grave of J. P. Giraud, Jr., author of the 'Birds of Long Island' and 'Sixteen New Birds of Texas.' Later in the day Audubon's original drawings, which are preserved in the library of the New York Historical Society, were examined.

An attractive feature of the meeting was the special exhibits arranged for the occasion by the American Museum. In one of the alcoves in the Bird Hall were shown a number of paintings and sketches of birds by Louis Agassiz Fuertes and Miss Althea R. Sherman; in a case in the lecture room was an exhibit of mounted birds containing some of the characteristic species of the avifauna of the war zone; and a large case near the entrance of the Museum contained an exhibit commemorating the centennial of the Expedition to the Rocky Mountains under the command of Major Stephen H. Long in 1819-20. This expedition which was accompanied by the naturalists Thomas Say and Titian Ramsay Peale, was the first U. S. Government expedition on which naturalists were officially detailed. A map showing the route of the party, the official report, and specimens of the 13 new birds described by

Say, copies of portraits and publications of Long, Say and Peale, pictures of Say's home and several unpublished manuscripts served to visualize the work of these early explorers.

Results. In addition to the opportunities for personal conference and discussion, for comparison of specimens and consultation of books and records, several important results were accomplished during the sessions. Chief among these were the formal acceptance of the William Brewster Memorial and the appointment of a special committee to administer the fund, the reorganization of the Committee on Nomenclature and Classification of North American Birds, authorization of the appointment of a committee to prepare a decennial index of 'The Auk' covering the years 1911 to 1920, consideration of the plan for the 'Systema Avium' undertaken by the B. O. U., and a proposal for an International Ornithological Congress in 1921. Those who attended the New York meeting will long remember the first reunion after the war as one combining the interests of the present with memories of the past and especially in affording unusual opportunities of visiting Audubon's home and monument and examining the original drawings of his great work 'The Birds of America.'

The next meeting will be held in Washington, D. C., in November, 1920.

PROGRAM

(Papers marked with an asterisk were illustrated by lantern slides)

TUESDAY

- 1 In Memoriam — Lyman Belding. Dr. A. K. Fisher, Washington, D. C. (30 min.)
- 2 Greetings from the British Ornithologists' Union. W. L. Selater, London, England. (20 min.)
- 3 Exhibition of a Sparrow-proof Bird-nesting Box. Ernest Thompson Seton, Greenwich, Conn. (5 min.)
- 4 Recollections of Audubon Park. Dr. Geo. Bird Grinnell, New York. (20 min.)
- 5 Winter Bird Life in Montana. Aretas A. Saunders, South Norwalk, Conn. (20 min.)
- 6 A few Words for a Slighted Bird [the Coot]. Dr. Harry C. Oberholser, Washington, D. C. (10 min.)
- 7 Nesting Habits of the Nighthawk at Tacoma, Wash. J. Hooper Bowles, Tacoma, Wash. (Read by title).

- 8 Bird Banding by Means of Systematic Trapping. S. Prentiss Baldwin, Cleveland, O. (25 min.)
- 9 Further Notes on the Birds of Hatley, Quebec, 1919. Henry Mousley, Hatley, Quebec. (Read by title).
- 10 Wm. L. Baily Sr., as an Ornithologist, with special reference to Unpublished Plates of Hummingbirds. Wm. L. Baily, Philadelphia, Pa. (30 min.)
- 11 *The Heath Hen of Marthas Vineyard. Dr. George W. Field, Washington, D. C. (15 min.)
- 12 *Some Notes on the Plumage of the Ruffed Grouse. Dr. Arthur A. Allen, Ithaca, N. Y. (10 min.)
- 13 *Anomalous Nesting of the Robin. Ernest Thompson Seton, Greenwich, Conn. (10 min.)
- 14 *Nesting of the Bohemian Waxwing [in British Columbia]. Harry S. Swarth, Berkeley, Calif. (10 min.)
- 15 *Observations on the Birds of the Chiricahua Mts., Arizona. Dr. Witmer Stone, Philadelphia, Pa. (45 min.)
- 16 *Notes on South American Birds. Dr. Frank M. Chapman, New York. (60 min.)

WEDNESDAY.

- 17 In Memoriam — William Brewster. Henry W. Henshaw, Washington, D. C. (Read by Dr. Frank M. Chapman). (30 min.)
- 18 An Appreciation of William Brewster. Dr. J. G. Gehring, Bethel, Me. (Read by Dr. Thomas Barbour). (10 min.)
- 19 Progress in Ornithology in 1919. Introduced by the Secretary. Discussion by 10 members, closed by W. L. Slater. (90 min.)
- 20 Questions Concerning Bird Life. Miss Althea R. Sherman, National, Ia. (30 min.)
- 21 Courtship in Birds. Dr. Charles W. Townsend, Boston, Mass. (30 min.)
- 22 *Little Intimacies in Bird Home Life. Claude W. Leister, Ithaca, N. Y. (15 min.)
- 23 Notes on the Voices of Shorebirds. John T. Nichols, New York. (30 min.)
- 24 *The African Rails of the Genus *Sarothrura*. J. P. Chapin, New York. (25 min.)
- 25 *Hawks in Migration. B. S. Bowdish, Demarest, N. J. (25 min.)
26. Studies of the Races of Seaside Sparrows. John T. Nichols and Ludlow Griscom. (20 min.)

THURSDAY MORNING.

- 27 Impressions of Winter Bird Life in the Rhone Delta, France. Ludlow Griscom, New York. (20 min.)
- 28 Observations on Birds made during Active Service in France and Germany. Colin Campbell Sanborn, Chicago, Ill. (15 min.)

- 29 Recent Ornithological Notes from France and England. Francis Harper, Washington, D. C. (30 min.)
- 30 Distribution of the Fox Sparrows. Harry S. Swarth, Berkeley, Calif. (30 min.)
- 31 The Use and Abuse of the Genus. Dr. Witmer Stone, Philadelphia, Pa. (15 min.)
- 32 *Diatryma steini* — a Remarkable Bird from New Mexico. Dr. W. D. Matthew, New York. (5 min.)
- 33 Some of the Rarer and More Interesting Birds in the New York Zoölogical Park. Lee S. Crandall, New York. (10 min.)
- 34 Some Birds of Ontario. Rev. Chas. J. Young, Brighton, Ont. (Read by title).

THURSDAY AFTERNOON — MOTION PICTURES.

- 35 Exhibition of Moving Picture Films by W. L. Finley. T. Gilbert Pearson, New York. (45 min.)
- 36 Studies of Bird Life in Northern and Southern Refuges. Norman McClintock, Pittsburgh, Pa. (45 min.)
- 37 John Burroughs, the Naturalist. Herbert K. Job, West Haven, Conn. (10 min.)
- 38 The Present Status of Game Bird Propagation in America. Herbert K. Job, West Haven, Conn. (30 min.)
- 39 A Bird City. Hoyes Lloyd, Ottawa, Canada. (15 min.)
- 40 The Conservation Commission and its Relation to New York State Bird Life. Clinton G. Abbott, Albany, N. Y. (30 min.)

ELECTION OF FELLOWS, MEMBERS AND ASSOCIATES.

FELLOWS:

Joseph Harvey Riley, U. S. National Museum, Washington, D. C.
Alexander Wetmore, Biological Survey, Washington, D. C.

HONORARY FELLOW:

Dr. Edward Daniel Van Oort, Museum Natural History, Leyden,
Holland.

CORRESPONDING FELLOWS:

George Latimer Bates, Bitye, via Yaunde, Cameroon, West Africa.
Miss Evelyn Vida Baxter, The Grove, Kirkton of Largo, Fifeshire,
Scotland.
Dr. Arnold de Winkelried Bertoni, Puerto Bertoni, Paraguay.
Nathaniel Gist Gee, Soochow University, Soochow, China.
Arthur Francis Basset Hull, Prest, R. A. O. U., Box 704, G. P. O.,
Sydney, N. S. W.
Miss Annie C. Jackson, Swordale, Evanton, Ross-shire, Scotland.
Dr. John Albert Leach, Editor 'The Emu,' Eyrecourt, Canterbury,
Victoria, Australia.

Dr. Peter Chalmers Mitchell, Secretary Zool. Society London, Regents Park, London, N. W. 8, England.

Lacy I. Moffett, Kiangyin, via Shanghai, China.

Michael John Nicoll, Valhalla House, Zool. Gardens, Giza, Egypt.

Montagu Austin Phillips, Devonshire House, Reigate, Surrey, England.

Miss Leonore Jeffrey Rintoul, Lahill, Largo, Fifeshire, Scotland.

H. Kirk Swann, 38 Great Queen St., Kingsway, London, W. C. 2., England.

Seinosuke Uchida, No. 31, Kogai Cho, Azabu, Tokyo, Japan.

Capt. Samuel Albert White, Wetunga, Fulham, South Australia.

MEMBERS:

John Austin Farley, 52 Cedar St., Malden, Mass.

Harry Harris, Post Office, Kansas City, Mo.

Prof. Francis Hobart Herrick, Adelbert College, Cleveland, Ohio.

Thomas Edward Penard, 12 Norfolk Road, Arlington, Mass.

Dr. Albert Hazen Wright, Cayuga Heights, Ithaca, N. Y.

ASSOCIATES:

Howard Bernhardt Adelman, 221 Spring St., Buffalo, N. Y.

Horace Marden Albright, Yellowstone Park, Wyo.

Edward Gordon Alexander, 1603 South St., Lexington, Mo.

Mrs. James Turney Allen, 37 Mosswood Road, Berkeley, Calif.

Arthur Francis Allen, Editor Sioux City Journal, Sioux City, Ia.

Mrs. Charles Almy, 147 Brattle St., Cambridge, Mass.

Edwin Conrad Anderson, R. R. No. 4, Dell Rapids, S. Dak.

Miss Bernice Andrews, Flat 3, 2006 Park Ave., Minneapolis, Minn.

William Andrews, Courtney, Jackson Co., Mo.

Edmund Watts Arthur, Cheswick, Pa.

Charles Ketchum Averill Jr., 406 Stratford Ave., Bridgeport, Conn.

Edward C. Avery, 114 Mariner St., Buffalo, N. Y.

Mrs. Ralph M. Bacon, Bryant Pond, Me.

Frank Newton Bassett, 1338 Sth St., Alameda, Calif.

Arthur William Beckford, 23 Maple St., Danvers, Mass.

Daniel Berman, 70 Morningside Drive, New York, N. Y.

Mrs. Archibald Pierce Bigelow, Ogden, Utah.

Sherman Clancey Bishop, State Museum, Albany, N. Y.

Andrew Anderson Black, Margaret, Man.

Dr. William Fremont Blackman, Jacksonville, Fla.

Reginald Stephen Boehner, Syracuse University, Syracuse, N. Y.

William Bowen Boulton, Morristown Trust Co., Morristown, N. J.

Mrs. Ward Taft Bower, 1440 Meridian Place, Washington, D. C.

Peter Alexander Brannon, Box 358, Montgomery, Ala.

Charles Marcus Breder, Jr., Bureau of Fisheries, Washington, D. C.

Harry Talmadge Briggs, 5 Hoffman Ave., Poughkeepsie, N. Y.

Gorham Brooks, 93 Beacon St., Boston, Mass.

- Miss M. Belle Brown, Buckland, Mass.
Roy Melton Brown, Boone, N. C.
Charles Anaultus Bruun, 314 Reliance B'ld'g., Kansas City, Mo.
Thornton Waldo Burgess, 61 Washington Road, Springfield, Mass.
Stewart Henry Burnham, R. D. No. 2, Hudson Falls, N. Y.
Miss Mary Bushinger, Monte Vista, Colo.
Miss Virginia Butler, Stockbridge, Berkshire Co., Mass.
Earl Wellington Calvert, Reaboro, Victoria Co., Ont.
Carlo Asprando Campini, 154 East 33d St., New York, N. Y.
Frank Mallary Carryl, 20 Burnett St., Maplewood, N. J.
Richard Morton Chase, 164 Westminster Road, Rochester, N. Y.
Henry Everett Childs, East Providence High School, E. Providence,
R. I.
Austin Hobart Clark, 1818 Wyoming Ave., Washington, D. C.
Miss Rowena A. Clarke, Kirkword, Mo.
Miss Jennie Clements, 508 South Main St., Independence, Mo.
Allen C. Conger, East Lansing, Mich.
Philip Tripp Coolidge, 77 Garfield St., Watertown, Mass.
Edward Joseph Court, 1723 Newton St., N. W., Washington, D. C.
Rodman Dayton Cox, Room 319, Y. M. C. A., Rochester, N. Y.
Allan Burton Craven, c/o T. F. Welch Co., 18 Arlington St., Boston,
Mass.
Miss Viola E. Crittenden, 19 Center St., Beverly, Mass.
Rev. George Roscoe Crockett, Dixon, S. Dak.
Warren Handel Cudworth, Assonet, Mass.
James Walter Cunningham, 3009 Dunham Ave., Kansas City, Mo.
Roy Quinn Curtis, Jr., 11 West 76th St., New York, N. Y.
Edward S. Daniels, 3869a Connecticut Ave., St. Louis, Mo.
Francis Roy Dean, 3465 South Spring Ave., St. Louis, Mo.
Samuel Stephen Dearborn, 9 Mass. Ave., Boston, Mass.
Paul Dent, 3714 West Pine Boulevard, St. Louis, Mo.
John Smith Dexter, Univ. Saskatchewan, Saskatoon, Sask.
McClelland Dings, 5715 Enright Ave., St. Louis, Mo.
Gilbert Harry Doane, The Elms, Fairfield, Vt.
Ralph James Donahue, Bonner Springs, Kans.
Harold A. Dowler, Veteran, Alberta, Can.
Theodore Drier, 35 Remsen St., Brooklyn, N. Y.
Dr. William H. Dunham, Shaftsbury, Mich.
Miss Laura Bradshaw Durand, 153 University Ave., Toronto, Ont.
Osborne Earle, 17 Bates St., Cambridge, Mass.
Robert D. Emmerich, 322 W. 100th St., New York, N. Y.
Mrs. T. F. English, 3631 Campbell St., Kansas City, Mo.
W. J. Erickson, 2311 Bernard St., Savannah, Ga.
Frank C. Evans, Crawfordsville, Ind.
Miss Harriet N. Farr, Bernardston, Mass.
Clarence Faust, New Middletown, Ohio.

Lyle Fletcher, Norton, Kans.
 Lee M. Ford, Box 8, Great Falls, Mont.
 Miss Louise Petigru Ford, Aiken, S. C.
 Allen Frost, Poughkeepsie, N. Y.
 Howard Fuguet, 1623 Walnut St., Philadelphia, Pa.
 Aston Colebrook Gardner, 1805 Market St., Wilmington, Del.
 James Henry Gardner, 626 Kennedy Building, Tulsa, Okla.
 Dr. P. K. Gaston, Pratt, Kans.
 Mrs. F. M. Gilbert, Walpole, N. H.
 J. Nelson Gowanlock, Hull Zool. Lab., Univ. Chicago, Chicago, Ill.
 Cyrl Grace, 522 Fifth St., Bismarck, N. Dak.
 Mrs. Adele Lewis Grant, Mo. Botanical Garden, St. Louis, Mo.
 Albert Edward Greanoff, 220 Montgomery Ave., W. Pittston, Pa.
 Willet E. Griffec, Route 3, Box 68, Corvallis, Ore.
 Herbert Groh, Preston, Ont.
 Judge Jules Edward Guinotte, 1215 Manheim Road, Kansas City, Mo.
 Prof. Horace Gunthorp, 1525 College Ave., Topeka, Kans.
 Robert C. Haas, 612 Hodges Bldg., Detroit, Mich.
 Henry Pennington Haile, 28 Edwards St., Springfield, Mass.
 Thomas Hallinan, 212 Madison Ave., Paterson, N. J.
 Joseph Edward Hallinen, Cooperton, Kiowa Co., Okla.
 Mrs. Rhea Hance, R. F. D., German Valley, N. J.
 G. Dallas Hanna, Calif. Acad. Sciences, San Francisco, Calif.
 Wilson Creal Hanna, 1000 Penn. Ave., Colton, San B'd'no. Co., Calif.
 Mrs. Alice B. Harrington, Lincoln, Mass.
 George Leib Harrison, Jr., 400 Chestnut St., Philadelphia, Pa.
 Harry Morgan Harrison, 503 Linden St., Camden, N. J.
 George I. Hartley, 344 West 87th St., New York, N. Y.
 Henry Osborne Havemeyer, Jr., Mahwah, N. J.
 Alden Healey, 2006 Northampton St., Holyoke, Mass.
 Charles Foote Hedges, Box 24, Miles City, Mont.
 Ashton Erastus Hemphill, Phoenix Chambers, Holyoke, Mass.
 Miss Kathleen M. Hempel, Elkader, Ia.
 C. Brooks Hersey, 456 Potomac Ave., Buffalo, N. Y.
 James Daniel Hightower, P. O. Box 782, Greensboro, N. C.
 Miss Carmelita A. Hill, Menominee, Wis.
 Harry H. Hipple, Delaware, Ohio.
 Mrs. C. W. Hitchcock, Berlin, Wis.
 Richard E. Hoisey, Highland Park, Reservoir Ave., Rochester, N. Y.
 George Buell Hollister, Corning, N. Y.
 Neil Hotchkiss, 616 S. Crouse Ave., Syracuse, N. Y.
 George Thomas Hughes, Watchung, N. J.
 Chreswell John Hunt, 5847 W. Superior St., Chicago, Ill.
 Miss Lucy Olcott Hunt, 185 Beacon St., Hartford, Conn.
 Miss Frances Amelia Hurd, 43 West Ave., South Norwalk, Conn.
 Samuel Hyslop, 42 Bellevue St., Newton, Mass.

- Dr. Edmund Randolph Peaslee Janvrin, 515 Park Ave., New York, N. Y.
Prof. Charles Eugene Johnson, Dept. Zoology, Univ. Kansas, Lawrence, Kans.
Frank Tenney Johnson, 48 Charles St., New York, N. Y.
Rev. Walter Robert Johnson, Ninette, Manitoba.
James Dent Jokerst, 6034 Suburban Ave., St. Louis, Mo.
Mrs. Susan Mary Kane, University Campus, Seattle, Wash.
Edward Gruet Kent, 2595 Boulevard, Jersey City, N. J.
Dr. Robert H. Kingman, 11 South Cedar Ave., Arverne, L. I., N. Y.
Alexander Barrett Klots, 125 West 78th St., New York, N. Y.
Wesley Frank Kubichek, Apt. 30, 2305 18th St., N. W., Washington, D. C.
Joseph D. La Brie, 1717 East 78th St., Kansas City, Mo.
Albert Lano, Fayetteville, Ark.
C. B. Lastreto, 260 California St., San Francisco, Calif.
J. A. Laughlin, 318 East Gordon St., Marshall, Mo.
Mrs. Florence R. Leavitt, 42 Forest St., Lexington, Mass.
Dana Leffingwell, Aurora, Cayuga Co., N. Y.
John Howard Leman, 48 Beacon St., Boston, Mass.
Miss Ruby Lenssen, Englewood, N. J.
Dr. David Moore Lindsay, 808 Boston Bldg., Salt Lake City, Utah.
Mrs. Lucina Haynes Lombard, Gorham, Maine.
J. Anderson Lord, 13 Ash St., Danvers, Mass.
Miss Margaret Allen Lunn, 301 The Sherman, Washington, D. C.
Bennett Walter Mabbott, Unity, Wis.
Richards Bryant Mackintosh, 5 Howard Ave., Peabody, Mass.
W. A. Macpherson, Jr., Lamar, Colo.
Michael Jarden Magee, 603 South St., Sault Ste. Marie, Mich.
Miss Kate A. McCloskey, 154 Regent St., Saratoga Springs, N. Y.
Dr. Charles A. McNeil, 111½ West 4th St., Sedalia, Mo.
Mark S. Martenet, 3403 Fairview Ave., Forest Park, Baltimore, Md.
Oliver Perry Medsger, 9 Columbia Ave., Arlington, N. J.
William Claire Menninger, 709 W. 169th St., New York, N. Y.
William Clopton Michaels, 645 W. 56th St., Kansas City, Mo.
Brent MacFarland Morgan, 1310 B St. S. W., Washington, D. C.
Louis Fred Morlock, Creve Coeur, Mo.
Mrs. Charles F. Moore, 35 Congress St., Greenfield, Mass.
Miss Evelyn Moore, W. Sullivan St., Olean, N. Y.
George Frederick Morse, Jr., Franklin Park, Grove Hall, Boston, Mass.
Miss Margarette E. Morse, 3513 Bloomington Ave., Minneapolis, Minn.
Mrs. Edmund Quincy Moses, care Mrs. E. M. Mead, 303 W. 84th St., New York, N. Y.
James L. Mullen, 614 E. 6th South St., Salt Lake City, Utah.

- Dr. Eugene Edmund Murphey, 432 Telfair St., Augusta, Ga.
 Mrs. Robert Cushman Murphy, 272 Hicks St., Brooklyn, N. Y.
 Edgar N. Murray, R. F. D. 2, Box 71, Northville, Mich.
 J. Robert Mutch, Mount Herbert, Prince Edward Id.,
 James C. Neely, 135 High St., Brookline, Mass.
 Johnson Neff, Marionville, Mo.
 Rodman Armitage Nichols, 33 Warren St., Salem, Mass.
 Ignatius D. O'Donnell, Billings, Mont.
 Mrs. L. S. O'Roark, 29 Rutherford Ave., Rutherford, N. J.
 Prof. Henry Fairfield Osborn, Am. Mus. Nat. Hist., New York, N. Y.
 Mrs. J. M. Overfield, Jr., 255 Breckenridge St., Buffalo, N. Y.
 Miss Marion Jay Pellew, 1637 Mass. Ave., N. W., Washington, D. C.
 William Dana Pennington, 1722 4th St., Congress Heights, D. C.
 Prof. Horace G. Perry, Acadia Univ., Wolfville, Nova Scotia.
 Rev. Orville Anderson Petty, Chapel St. & Sherman Ave., New Haven,
 Conn.
 Charles Phillips, 2506 Plymouth Ave., Minneapolis, Minn.
 Dr. Charles Bingham Penrose, 1331 Spruce St., Philadelphia, Pa.
 Albert Pinkus, care Louis Pinkus, 549 Main St., Hartford, Conn.
 Miles David Pirnie, 428 N. Tioga St., Ithaca, N. Y.
 Alexander Pope, 1013 Beacon St., Brookline, Mass.
 Laurence Bedford Potter, Eastend, Sask.
 George Newton Proctor, 37 Cabot St., Winchester, Mass.
 Miss Clara Everett Reed, Brookfield, Mass.
 Russell Reid, 722 5th St., Bismarck, N. Dak.
 Harry C. Ridlon, Cuttingsville, Vt.
 Archibald Hamilton Ritchie, Half Way Tree P. O., Jamaica, B. W. I.
 Prewitt Roberts, Conway, Laclede Co., Mo.
 Mrs. L. K. Robinson, 1130 South Franklin St., Denver, Colo.
 Miss Mary L. Robinson, Lathrop Trade School, Kansas City, Mo.
 Miss Emily Rochester, 238 Elmwood Ave., Buffalo, N. Y.
 Rev. B. F. Root, 592 Kossuth St., Bridgeport, Conn.
 Brother Rodolphe, Laval des Rapides, Laval Co., P. Q., Canada.
 George Harold Roush, 301 Maple Ave., Fairmont, W. Va.
 Harold Goddard Rugg, Hanover, N. H.
 Mrs. Robert O. Ryder, 1041 Franklin Ave., Columbus, O.
 Mrs. Mary Searl Sage, 1974 Broadway, New York, N. Y.
 John Clark Salyer, 2412 Main St., Lexington, Mo.
 Dr. Leonard Cutler Sanford, 216 Crown St., New Haven, Conn.
 Mahlon Levis Savage, 1338 Orthodox St., Frankford, Philadelphia, Pa.
 Orpheus Moyer Schantz, 10 South La Salle St., Chicago, Ill.
 Ernest Karl Schleichert, Mathias Point, Va.
 Dr. Hermann von Schrenck, 4139 McPherson Ave., St. Louis, Mo.
 Dr. James Ebenezer Norton Shaw, Mattapoisett, Mass.
 Harry Hargrave Sheldon, 'Serena,' Carpinteria, Calif.
 Mrs. Theodore C. Sherwood, 3520 Cherry St., Kansas City, Mo.

- Albert Elwood Shirling, 3849 East 62d St., Kansas City, Mo.
 Miss Susie L. Simonds, Hartland, Wis.
 Mrs. H. DeForrest Smith, Chula Vista, San Diego Co., Calif.
 Wendell Phillips Smith, Wells River, Vt.
 Elias LeRoy Snyder, 1244 North Emporia Ave., Wichita, Kan.
 Lester Lynne Snyder, Royal Ontario Museum, Toronto, Ont.
 Prof. George Walter Stevens, Normal College, Warrensburg, Mo.
 Harry Hebert Stone Jr., Sturbridge, Mass.
 George Miksch Sutton, Carnegie Museum, Pittsburgh, Pa.
 Miss Ora D. Sweet, 34 Elizabeth St., Auburn, N. Y.
 Dix Teachenor, 3237 Garfield Ave., Kansas City, Mo.
 Dr. R. J. Terry, 5315 Delmar Ave., St. Louis, Mo.
 Gerald Bamber Thomas, 229 Burlington Ave., Billings, Mont.
 W. S. Thomas, Negley & Elgin Aves., Pittsburgh, Pa.
 Herbert L. Thowless, 765 Broad St., Newark, N. J.
 Charles Walter Tindall, 912 North Noland St., Independence, Mo.
 Dr. Solon Rodney Towne, Station D, Route 2, Omaha, Neb.
 Rev. Manley Bacon Townsend, 9 Mt. Pleasant St., Nashua, N. H.
 Willard Ellery Treat, Silver Lane, Conn.
 Robie Wilfrid Tufts, Wolfville, Nova Scotia.
 Mrs. Margaret Gilbert Tullock, 379 Edgewood Ave., New Haven,
 Conn.
 Clark C. Van Fleet, Box 468, Santa Rosa, Calif.
 Miss Loula Van Neman, Westport High School, Kansas City, Mo.
 Egbert Hamilton Walker, 1237 Olivia Ave., Ann Arbor, Mich.
 Mrs. Joseph S. Ware, Durango, Colo.
 Charles Gray Watson, 201 Ridout St., London, Ont.
 H. W. Weisgerber, 3638 Loveland Road, R. D. 4, Youngstown, O.
 Charles Slade West, Marianna, Fla.
 Rev. Harry Edgar Wheeler, Fayetteville, Ark.
 Joseph Randall Whitaker, Grand Lake, Newfoundland.
 Adrian P. Whiting, 163 Sandwich St., Plymouth, Mass.
 Francis H. Whitman, 65 Duke St., Kitchener, Ont.
 F. N. Whitman, McGraw Hall, Ithaca, N. Y.
 Oscar Theodore Willard, Jr., 1444 East 54th St., Chicago, Ill.
 Dr. Hugh Williams, 301 Beacon St., Boston, Mass.
 John Williams, St. Marks, Wakulla Co., Fla.
 Laidlaw Williams, 152 West 57th St., New York, N. Y.
 C. H. Wilson, 52 Warren St., Glens Falls, N. Y.
 Mrs. Charles M. Wilson, 503 Lafayette Ave., Buffalo, N. Y.
 Gordon Wilson, State Normal School, Bowling Green, Ky.
 Miss Helen Durand Wise, Apt. 30, 1930 18th St., N. W., Washington,
 D. C.
 Walker Fred Woods, 1261 Broadway, Alameda, Calif.
 Roy Church Woodworth, 204 East 35th St., Kansas City, Mo.
 Frank Ernest Woodward, 48 Abbott Road, Wellesley Hills, Mass.
 Joseph Zuckerman, Am. Mus. Nat. Hist., New York, N. Y.

DECEASED MEMBERS, 1918-1919.

William Brewster, ¹ Founder and Fellow, aged 68, died at Cambridge, Mass.	
	July 11, 1919
Dr. Frederick DuCane Godman, ² Honorary Fellow, aged 85, died in London, Eng.	Feb. 19, 1919.
Motoyoshi Namiye, ³ Corresponding Fellow, of Tokyo, Japan, died in his 64th year	May 24, 1918
Dr. Louis Brasil, ⁴ elected a Corresponding Fellow in 1918, died at Caen, France, at the age of 53	Oct. 15, 1918
Mrs. Olive Thorne Miller, ⁵ Member, age 87½, died in Los Angeles, Calif.	Dec. 25, 1918
Prof. Louis W. Dorn of Fort Wayne, Ind., died	1918
Mrs. Henry A. Knapp, Associate, of Scranton, Penn., died in the spring of	1918
Charles Henry Davis, aged 70, died at Saginaw, Mich.	Oct. 5, 1918
Leo Wiley, ⁶ aged 28, died at Shandon, Calif.	Oct. 31, 1918
Edgar Tweedy of Danbury, Conn., died	Nov. 17, 1918
Merrill Willis Blain, ⁷ died at Los Angeles, Calif., in his 25th year	Dec. 26, 1918
Barron Brainerd, of Brookline, Mass., aged 26, died in	May, 1919
Edward Everett Brewster, died at Schenectady, N. Y.	July 1, 1919
Frederic Morton Crehore, aged 61, died at Boston, Mass.	Oct. 16, 1919
Dr. Henry Kemble Oliver, aged 90, died at Boston, Mass.	Oct. 25, 1919
Joseph Moody Ackerman of Newburyport, Mass., died	1919

¹ For obituary notice, see Auk, XXXVI, p. 628.

² " " " see Auk, XXXVI, p. 319.

³ " " " see Auk, XXXVI, p. 628.

⁴ " " " see Auk, XXXVI, p. 449.

⁵ " " " see Auk, XXXVI, p. 163.

⁶ " " " see Auk, XXXVI, p. 629.

⁷ " " " see Auk, XXXVI, p. 629.

GENERAL NOTES.

The Black Skimmer on Long Island, N. Y.— On May 25, 1919, at Long Beach, L. I., three Skimmers were seen flying west. Two were pretty far out, but one was well inshore, though apparently all three birds were together. We were immediately impressed by the sharp black and white colors, forked tail, the remarkably long and slender wings, and the characteristic flight. It is perhaps only proper to add that the senior author was well acquainted with the Skimmer in life, and knows of no other North American bird with which it could reasonably be confused. In late years a rare straggler to Long Island, it is possible that its recent reappearance on the Jersey coast may cause its visits to Long Island to become more frequent. Considering the date, our birds were probably ambitious migrants which had overshot the mark. At least they were seemingly bent on getting home as fast as possible.— LUDLOW GRISCOM AND DR. E. R. P. JANVRIN, *Amer. Mus. Nat. Hist., New York City.*

Another Record of the White Pelican in New York.— Eaton, in his 'Birds of New York' (1909) notes only eleven recorded instances of the occurrence of *Pelecanus erythrorhynchos* from the entire State. Recently, in looking over some old personal journals, the writer ran across an entry to the effect that the late Leslie W. Lake of this village saw a White Pelican in Hamburg township during the summer of 1863. Mr. Lake was a keen observer and a very careful field worker; moreover, he was familiar with the species due to a former residence in portions of the West where it is of more common occurrence.

The writer recalls questioning his informant very carefully relative to this identification, and is himself familiar with the bird, having met with it in some numbers in Yellowstone National Park. While it seems unusual that the bird should have been found here during the summer, certainly no error was made in its identification, as Mr. Lake noted at close range the large size, white plumage, long bill and pouch.— THOMAS L. BOURNE, *Hamburg, N. Y.*

A Note on the "Southern Teal."— The leading article in the October number of 'The Auk,' entitled 'Notes on a New Subspecies of Blue-winged Teal,' by my friend, Frederic H. Kennard, held for me more than cursory interest for the reason that I have been studying this supposed form for some time, had corresponded with Mr. Kennard, regarding it, and had held, up to this spring, that it might form a valid subspecies.

I have had in the flying cage in Audubon Park, New Orleans, for the past three years a collection of wild waterfowl obtained on the Louisiana marshes. Among the ducks thus held in captivity was a drake Blue-winged Teal that had the curious white line over the eye as a continuation of the characteristic crescent-shaped white spot, and had on the nape of the neck,

where the line converged with a white line from the opposite side, a conspicuous white patch. In the spring of 1918 I watched this drake emerge from its eclipse plumage and noted that while the white line and patch on the nape were on the new feathers they were not as definitely white as I had recollected the markings of the previous summer. When the drake made its moult during the fall of 1918 I again kept an interested watch on its plumage changes. It appeared in its new dress of feathers *without* either the white line over the eye or the patch on the nape of the neck, and up to the time of its death, the latter part of April, 1919, it was, when in full nuptial plumage not to be distinguished from any ordinary Blue-winged Teal in high feather.

It might be stated that this "necktie teal," to use a term I had never heard until I saw it in Mr. Kennard's paper, was the sole survivor of a flock of seven Blue-wings held in the cage, four females and three drakes. The two other drakes at no time exhibited any indication of the curious white markings and died while the "necktie teal" was still in its curious plumage—from which it afterwards molted.—STANLEY CLISBY ARTHUR, *Dept. Conservation, New Orleans, La.*

Trumpeter Swan (*Olor buccinator*) in Western Minnesota. A Correction.—I recorded the capture of a beautiful adult male of this species (see 'Auk,' Vol. XIII, page 78), which I have discovered is only the more common species the Whistling Swan (*Olor columbianus*). This specimen together with an adult female secured at Aitkin, Minnesota, ten years later, are now in the Natural History Survey Collection, University of Minnesota, at Minneapolis.—ALBERT LANO, *Fayetteville, Arkansas.*

Wild Swan on Long Island, N. Y.—Mr. John L. Lawrence, while duck shooting off Doctor's Point, on Narrow Bay, between Smith's Point and Moriches, at Mastie, Long Island, saw, on November 5, 1919, one swan, a cygnet, about 150 yards away, flying east. The next day, November 6, one adult swan and one cygnet, came into the duck decoys and stayed there some time, swimming slowly around, feeding, within thirty yards.

On November 8, two swans, both adults, came within 100 yards, circled around the blind, and then settled in the water some distance away.

It seems to me that the record is worth noting in 'The Auk,' as wild swan on long Island are most unusual.—NEWBOLD T. LAWRENCE, *Lawrence, Long Island, N. Y.*

Notes on Some Shore Birds of the Alabama River, Montgomery County, Ala.—On Saturday, September 20, 1919, accompanied by a friend who is both a hunter and a naturalist, I made a trip of several miles down the Alabama River from the city of Montgomery for the purpose of collecting fall migrants then numerous in this region. The Alabama River is formed of the Coosa and the Tallapoosa and is a navigable stream from Montgomery to Mobile. It is a noble stream with high wooded banks.

Except in a few places, it has a good depth, and has a steady flow of about four miles an hour. Several large and small creeks flow into the river between Montgomery and Selma. All in all the scenery is exceedingly attractive.

The Federal Government in its improvement of the river has constructed a number of jetties back of which numerous mud flats are formed. These flats at this and other migrating seasons, afford feeding grounds for all long billed migrants, as well as the residents. Among the latter are the Killdeer, Spotted Sandpiper, and one or two others which are to be found practically all the year and which mix very freely with the visitors.

The notes below are contributed in the hope that they may add to the meagre available information concerning these birds in the interior.

Pisobia minutilla. LEAST SANDPIPER.—Several small flocks and numbers of singles and pairs of the Least Sandpiper, were seen, and two specimens, a male and a female, were taken. These two, with one of the Semipalmated and one of the Solitary, below, were all secured from the same flock. The Leasts were beginning to take on their winter plumage.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.—Two single specimens of the *E. pusillus* were collected, one of which was from the flock of *P. minutilla* above referred to. An interesting incident happened in connection with the effort to get another one. Shooting from the moving boat in midstream at a single, on the water's edge, his wing only was injured. The bird fell into the water, but managed to climb up the river bank, five or six feet, by the time the boat could be stopped and run into shore. It again fell into the water, and on making an effort to take it in my hand, it rose and flew along the surface about 400 feet directly across the river, alighting twenty yards up stream on a rocky ledge, covered with high grass. We noted the point, and on getting there could have easily killed it, but preferring to make a capture, landed for that purpose. Even though we stepped near enough to frighten the bird from under our feet more than once, it was effectually concealed by the surroundings, and finally lost.

Helodromas s. solitarius. SOLITARY SANDPIPER.—Only one specimen of the Solitary, a female, was noted. This bird was killed, while feeding, with five or six of *P. minutilla* and about the same number of Killdeer.—PETER A. BRANNON, *Dept. of Archives, Montgomery, Ala.*

The Black Rail at St. Marks, Florida.—While our section of the country falls within the known winter habitat of this diminutive and most secretive member of the Rallidae it was not until the fall of 1915 that I had positive knowledge of the occurrence of *Creciscus jamaicensis*. I had traversed the extensive tidal marshes at all seasons of the year and had seen here every other member of the family known to inhabit our part of the Gulf coast.

One or two fleeting glimpses of a scurrying black form amongst the thick growth of grass and reeds in the vicinity of a pond had at times suggested

this species but nothing more definite had been noted. On September 4, 1915, during a tide four or five feet above usual high water — the off-shoot of a gulf hurricane — an adult Black Rail was picked up at the edge of the incoming waters on the railroad embankment within the limits of our village and was water-soaked and almost lifeless. A small offer for other specimens soon brought another bird and reports of at least two or three others seen, all on the date above given.

On October 6, 1916 two of these birds were observed near the lighthouse, at low tide, flying from or near the water's edge and among some coarse and rather sparsely growing water plants inshore to the cover of the tidal marsh.

On September 11, 1919, we again had high water — visible evidence of the Key West hurricane — about four feet above ordinary high tide. In a skiff-boat, over the river marsh, with a boy to row, six Black Rails were collected by hand in less than an hour and probably three or four others were seen. No wind or rain accompanied this high tide but seemingly the birds were exhausted by their efforts to cling to the bushes which were their only refuge above the water. Usually at the first feeble flight or effort to fly, the bird fell into the water and on closer approach of the boat would dive and make short-lived efforts to escape.

Of these six birds three were adult (?) females or were at least decidedly older than the other three. Of the three younger birds two were males and one a female.

Juv. No. 1 had the primaries partly developed but not fully from the sheaths. A well marked shading of brown showed on the nape and traces of down clung to the tips of some of the primaries. The wings, back, breast and flanks were decidedly darker than in the older birds.

The other two young birds were seemingly of equal age and considerably younger than juv. No. 1. Their primaries were just showing the tips and there was a slight trace of the brown on the hind neck. The white spots of back, wings and flank while not so marked as in the adult are clearly indicated. There is a slight, light-colored spot not clearly defined on the bills of the two younger birds about one-third of the distance from the base, but present in both specimens.

So far as can be ascertained this is the first record of *C. jamaicensis* nesting in the State where the young birds have been secured.¹

The undeveloped condition of the two younger specimens — Nos. 2 and 3 — precludes a possibility of their having been reared elsewhere than on the marsh on which they were captured. This tidal marsh close by our village and not infrequently overflowed, is about seven miles up the river from the Gulf and but two miles above usual salt water. It is not unusual in times of strong east or south-east winds to have salt water a mile or more above where these birds were found.

¹ Baynard, — 'Breeding Birds of Alachua County, Fla.' (Auk, XXX, p. 243, 1913), records seeing an adult with three young but apparently collected no specimens.

The measurements of the specimens in inches were as follows:

	Length	Wing	Tarsus	Bill
Adult (?) ♀	$6\frac{1}{4}$	$2\frac{7}{8}$	$\frac{7}{8}$	$\frac{9}{16}$
" (?) ♀	$6\frac{1}{8}$	3	$\frac{7}{8}$	$\frac{9}{16}$
" (?) ♀	$6\frac{1}{4}$	$2\frac{7}{8}$	$\frac{7}{8}$	$\frac{9}{16}$
Juv. No. I ♂	$5\frac{5}{8}$	$2\frac{1}{2}$	$\frac{7}{8}$	$\frac{5}{8}$
Juv. No. II ♂	$5\frac{1}{4}$	—	$\frac{7}{8}$	$\frac{1}{2}$
Juv. No. III ♀	5	—	$\frac{7}{8}$	$\frac{7}{16}$

JOHN WILLIAMS, *St. Marks, Florida.*

Purple Gallinule in North Carolina.—A young Purple Gallinule (*Ionornis martinicus*) was shot by me at Currituck Sound, N. C., on November 12, 1919, sex undetermined. The record seems worthy of publication since there are only two previous records for the State.

The specimen was identified by Newbold T. Lawrence Esq. and Mr. Thomas Rowland and confirmed by my examination of skins in the collection of Dr. J. Dwight at the American Museum of Natural History. — H. F. STONE, *29 East 82rd. St., New York, N. Y.*

Breeding of the Mourning Dove in Maine.—On June 8, 1919, while in York County, Maine, not more than a mile from the New Hampshire border at East Rochester, four doves were seen and we were shown a nest in a small white pine grove, from which the young were said to have already flown, though two of our birds flew from the grove as we approached. The Mourning Dove is considered a very rare breeder in southwestern Maine, and as there seem to be very few definite records, our observation seems worthy of note.

Incidentally these birds had been reported as Passenger Pigeons by the local observers, one of whom was said to be an old pigeon-hunter. No reports we have ever seen were so plausible or circumstantial, nor could we have encountered greater certainty in our correspondents. The old pigeon-hunter, in fact, did not credit our identification of these birds as doves. In view of the numerous reports of Wild Pigeons, most of which are never followed up, we think that our experience is of interest. — W. DEW. MILLER AND LUDLOW GRISCOM, *American Museum of Natural History, New York City.*

The Status of Harlan's Hawk in Colorado.—Harlan's Hawk (*Buteo b. harlani*) was first officially recorded for Colorado by Mr. Robert Ridgway in 1885 (Auk, II, 1885, p. 165) although he had previously referred to the specimen in 1882 on page 252 of Vol. I, of the same journal, when he called attention to the possible identity of *Buteo cooperi* and *B. b. harlani*. This specimen he recorded as taken by C. E. H. Aiken near Colorado Springs, Colorado, without exact date.

In March, 1897, Prof. Wells W. Cooke published his 'Birds of Colorado' from the Colorado Agricultural College, quoting this record and adding the note that "one was probably taken by Capt. P. M. Thorne at Fort Lyon," no date or other particulars of this reported capture being given. Throughout the three succeeding supplements to this work these records are permitted to stand without comment.

The next important work on the state birds was W. L. Slater's 'History of the Birds of Colorado,' and as the original material therein was taken mainly from the Aiken collection at Colorado College, additional data relative to this specimen might have been expected. His only comment, however, was that "I have not been able to trace this specimen in the Aiken collection," indicating that the bird had probably been lost or destroyed.

As it is obvious that the record credited to Capt. Thorne cannot stand scrutiny, the status of the species in the State thus depends upon the existence of the Aiken specimen. The recent acquisition of a fine Colorado specimen by the Colorado Museum of Natural History aroused my interest in the matter and stimulated an investigation that adds considerably to the known history of the earlier record.

A letter to Mr. Aiken enlisted his generous assistance and a few passages from his reply will be of interest in this connection. He states, in part: "In 1872 I went to Denver . . . and while there called on Rudolph Borchardt (taxidermist). I saw at his shop 3 or 4 *Buteo* skins and when I exhibited interest in them Mr. Borchardt gave them to me. I did not inquire where they were from . . . One of these sent to Ridgway for identification he pronounced *Buteo cooperi*. Years after, in 1883, I think, Ridgway wrote requesting me to send this specimen for reexamination and it was then determined to be *B. harlani*. The specimen I believe was untagged and Ridgway quite naturally assumed that I had killed it and near Colorado Springs. The specimen may be lost . . ."

Accordingly, although the identity of the specimen may remain unquestioned, it will be readily noted that while probable, there is no definite proof that the original record of *Buteo b. harlani* was a Colorado killed bird. In fact, evidence from other taxidermists of this early period indicate that a great many specimens were brought into the State from outside sources, mounted here and sold without any information being given as to their locality or collector, and the assumption that such material was of local take has been the cause of numerous errors which have crept into Colorado's ornithology. So, whether lost or not, this record must be regarded as questionable and were it not for the recent capture it might be necessary to eliminate the species from the accurate list of Colorado birds.

The Colorado Museum specimen, No. C. M. N. H. 7343, adult male, was killed near Littleton, Colorado, October 16, 1918. It is nearly typical in every respect, so much so in fact that were it before Dr. Coues when he wrote his 'Key' the description as there given would have been but slightly altered.—F. C. LINCOLN, *Colo. Museum Nat. Hist., Denver, Colorado.*

White Gyrfalcon (*Falco islandus*) in Montana.—An adult White Gyrfalcon, the sex of which was unfortunately not determined, was taken by G. B. Daniels, November 18, 1917, on Shonkin Creek, just east of the Town of Shonkin, Montana. The elevation of Shonkin is 3163 feet, and its location about forty miles east of Great Falls.

The specimen was in fine plumage and a very beautiful bird. It was sent to Seattle to a Mr. Oscar Gard, a fur dealer, by a party from whom he purchases furs, for the purpose of having it mounted, and the mounted bird later came into the possession of Mr. J. H. Bowles of Tacoma, who now has it in his collection.

The foregoing note is of interest in view of the fact, that there are but few records of this species having been taken in the United States.—S. F. RATHBUN, 217, 14th Ave., Seattle, Wash.

The Hawk Owl in North Dakota.—The only published intimation of the occurrence of the Hawk Owl (*Surnia ulula caparoch*) in North Dakota is a statement that it is found in "Dakota" (Baird, Brewer, and Ridgway, History North American Birds, III, 1874, p. 76). There is, however, in the collection of Mr. H. V. Williams a specimen taken by him at Grafton, North Dakota, on December 10, 1908. This forms, therefore, the first definite record of the species for the State.—HARRY C. OBERHOLSER, U. S. Biol. Survey, Washington, D. C.

Pileated Woodpecker in Morris County, N. J.—Noting the record of the Pileated Woodpecker in Sussex County, N. J., in the April 'Auk,' I thought that the following might be of interest.

In October, 1913 I had a close view of one of these birds at Newfoundland, Morris County, N. J. While I did not have my field glasses with me at the time, I got close enough to the bird to distinguish it plainly as it was hammering away on a dead chestnut tree.

A farmer at whose house I was staying described a bird to me which was evidently this species and told me that he had seen two or three of them that week.

Although I have spent much time since then in Morris County I have never seen another of these birds.—EDWARD G. KENT, 2595 Boulevard, Jersey City, N. J.

Unusual Habits of Chimney Swift.—About one P. M. August 17, 1919, while collecting insects near the eastern border of a broad brackish meadow, my attention was attracted to Chimney Swifts (*Chatura pelagica*) frequently flying slowly in from the west and disappearing in the fringe of vines and shrubs that separated me from the extreme east boundary of the marsh. In this heavy growth, from waist to head high, were elderberry bushes (*Sambucus canadensis*) heavily hung with ripe fruit. I selected a bird for special study. It advanced on descending, hovering flight. About four feet above the tangle, near the farther side, it paused and dropped abruptly into a clump of elderberries. Carefully marking the locality,

I worked my passage to a few feet of the spot. The swift was clinging to the cymoid head of the elder eating the fruit. The ease with which the bird took flight from its slender perch, rising directly upward several feet above the cover and dropping rail-like back into it, was interesting and worthy of note.

The cover harbored at the time not less than fifty swifts. Most of them were flushed with more or less difficulty, but some individuals took wing within arm-reach of the observer. No others were noted eating fruit. The day was dark and threatening with strong easterly wind.

One week later the writer had an opportunity for a second study of the region near the same hour, differing, however, in the day being clear and warm. No swifts were observed in the air on my arrival in the vicinity, but beating about in the heavy cover startled several therefrom. No further record could be obtained of their eating fruit. It should be stated that on the east side of this shelter is a row of medium sized willows with low, wide-spreading branches on the west, affording a continuous shadow over the haunts.

It is evident that the birds had established a roosting, or resting place out of the ordinary. It is not satisfactorily settled whether the birds sought the brush to feed on elder-berries or for shelter. The writer is of the opinion that the bird seen eating berries was only an exceptional case where the bird took a berry after alighting within reach of it.

The swift is a very uncommon breeding species in the limits of Orient. Rarely more than three to six pairs nest; while sometimes it does not nest at all. It is, however, regular and fairly common in August. There are no hollow trees at this station for their use, and they have never been seen to enter chimneys in the fall migration here. As the birds observed were practically all migrants, this habit of seeking shelter in deep shrubbery on the marshes should be noted in other localities also.

On the opposite side of the marsh is a great Tree Swallow roost, which is also occupied by grackles, martins, starlings and other species in their turn. Whether the two have any connection is a matter of conjecture.—ROY LATHAM, *Orient, Long Island, N. Y.*

Empidonax griseus in Nevada.—The Gray Flycatcher (*Empidonax griseus*) has been detected more or less frequently in Colorado, California, and Oregon, but there seems to be no published statement of its presence in the State of Nevada. There is, however, a very typical adult female in the Biological Survey collection (No. 158,354, U. S. Nat. Mus.) obtained by Mr. Vernon Bailey at Cloverdale, Nye County, Nevada, on May 30, 1898. Still another typical example, an adult female also in the Biological Survey collection (No. 158,350, U. S. Nat. Mus.), was obtained by the same collector at an altitude of 8700 feet on Arc Dome in the Toyabe Mountains in central Nevada, on May 25, 1898. The species will doubtless prove to be of more or less regular occurrence in this State.—HARRY C. OBERHOLSER, *U. S. Biol. Survey, Washington, D. C.*

The Crow of Colorado.— In a recent publication ('Auk,' Vol. XXXVI, No. 2, April, 1919, p. 198) the undersigned expressed his belief that the crows known to occur in San Luis Valley, Colorado, would prove to be of the subspecies *hesperis*. Thanks to the energetic efforts of Mrs. Jesse Stephenson of Monte Vista, Colorado, I received on September 29, 1919, a crow in the flesh, which gave an opportunity to pass on this belief. It was unusually good fortune that this specimen was an adult male in bright plumage. The small size, and weak bill and tarsi attracted immediate attention, and were too obvious to be overlooked, and subsequent examination of this bird confirmed the preliminary diagnosis of subspecies *hesperis*; the measurements while in the flesh, are as follows:—

Length 480 mm., wing 322 mm., tail 172 mm., tarsus 55 mm., depth of bill at nostril 17 mm., exposed culmen 42 mm.

All of these measurements are well within the limits given by Ridgway (Birds, North and Middle America, Vol. III, p. 270) as characteristic of *hesperis*, the single exception being that of length, and in this case the conflicting lengths are not comparable, since one is of skins, and the other of a bird in the flesh.

The specimen weighed sixteen ounces, forty-eight hours after death.—
W. H. BERGTOLD, 1159 Race St., Denver, Colo.

Appearance of the Canada Jay at Moorehead, Minn.— On October 5, 1919, while paddling up the Red River in a canoe, I was surprised to hear the unmistakable call of a Canada Jay (*Perisoreus c. canadensis*). A moment later the bird flew across the river and I was able to confirm my identification. October 12, I saw one again near Wild Rice, North Dakota, about ten miles south of here. A week later these birds had become common in this locality, five being seen at one time on one occasion. At present they are common along the river, having apparently established themselves as winter residents.

This is the first time I have seen the Canada Jay in this part of the State, and it is the more remarkable in that this is a comparatively thinly wooded region, not at all resembling the coniferous, Canadian zone, which is the natural home of this non-migratory bird. The woods here are confined to narrow strips bordering the Red River and other neighboring streams, with a few groves about various farm houses on the "Prairie," the trees being all deciduous.

This season has been rich in bird records for this vicinity. November 3 I saw a flock of eighteen White-winged Crossbills (*Loxia leucoptera*) feeding on the weeds along the roadside in the outskirts of Fargo, N. D. There was driving snow from the north at the time. November 17, I saw a Magpie (*Pica p. hudsonia*) south of Fargo. This is the first record I have for these species in this locality.

In this connection it may be of interest to note that abnormal weather conditions have prevailed this fall. October was unusually cold, snow fell October 23, and the ground has been snow-covered ever since. The night

of October 25, the Red River froze over and in the early part of November there were several days of storm and cold, the thermometer falling eight below zero on several occasions. It is difficult to say in what way weather conditions may influence the movements of birds. The Canada Jays appeared before the real cold weather began, while on the other hand a number of Robins, Bluebirds, and Flickers are still here, having weathered the storms and zero temperature.—O. J. MURIE, *Moorehead, Minn.*

Note on the Food of the Starling (*Sturnus vulgaris*).—A wonderful Virginia Creeper (*Psedera quinquefolia*) covers the entire south wall of our home here in Washington, the house having three stories and being of considerable length. The vine is a splendid sight every autumn; and after its scarlet leaves have fallen, there are exposed to view many hundreds of its bunches of beautiful berries. On November 8, Mrs. Shufeldt called my attention to a fine male Starling that had lit on one of the sprays of the vine, and was greedily eating this fruit. He was timid and wild, and flew away when he found us watching him from a window. A day or so thereafter, eight more of these birds, chiefly females, were devouring these berries, and they, too, flew away as soon as we appeared at a window close to them. On the 12th of the same month, some ten females of this species and two males also visited the vine, all greedily feeding on the berries, but taking to flight, as had all the others, as soon as they perceived they were being watched.—DR. R. W. SHUFELDT, 3356, 18th St., N. W., Washington, D. C.

Harris's Sparrow in Northern Michigan.—Definite records of the occurrence in Michigan of Harris's Sparrow (*Zonotrichia querula*) seem to be scarce enough to justify my reporting observations on this species in Marquette County, Michigan, this fall (1919). Sight records were as follows: September 26, six; September 27, one; October 2, four; October 3, one; October 6, one. Of these birds, two were collected, an immature female on September 26, and an immature male on October 3.

All of these sparrows were found on land owned by the Huron Mountain Club, located at Huron Mountain, Michigan. They seemed to spend their time in a rather narrow strip of small trees and bushes between the fields of the club farm and an open marsh, with the exception of the one recorded on September 27, which was seen in open pine woods about two miles from this place and not far from a river. They were never observed mingling with the Juncos and other sparrows that were common in that locality. I heard one Harris's Sparrow singing on the morning of October 2, a slow, drawling song, suggesting to me the song of the White-crowned Sparrow.

The identification of the two specimens collected by me was verified at the Field Museum of Natural History, Chicago, by Dr. W. H. Osgood.—STEPHEN S. GREGORY, JR., 2609 Hampden St., Chicago, Ill.

American Golden-eye and White-crowned Sparrow in Northern Michigan in Summer.—While about 130 species of birds have been

listed from the Douglas Lake region in northern Michigan for the summer months, the two following have not been recorded. These observations, which seem worthy of note, were made by the writer while a member of the staff at the University of Michigan Biological Station during the summer of 1919.

Perhaps the more notable of these records is that of the American Golden-eye (*Clangula c. americana*). On July 15 while looking for birds along the edge of Douglas Lake, a dead male of this species was discovered. Although it apparently had been dead for days, being partly decomposed, sufficient of the plumage of the head, wings and back was intact to allow of positive identification. Possibly the bird had been shot or injured and had been washed up on the shore of the lake for the carcass was but a few feet from the water's edge. Although the known breeding range includes northern Michigan, the writer is not aware of a definite published record for this region.

Another bird for which a summer record for the region is apparently lacking is the White-crowned Sparrow (*Zonotrichia l. leucophrys*). A single specimen was observed in the pines along the north shore of Douglas Lake on August 8. It is possible that this individual may have been an early fall migrant for others had not been seen previous to this time. Indeed, this was the only specimen of the species observed in the locality up to the time of departure on August 21, although field observations were being made almost daily. Barrows says of this species: "There is a possibility that this sparrow nests in the northernmost parts of the state but we have no positive record." (Michigan Bird Life, 1912, 503). Its near relative, the White-throated Sparrow (*Z. albicollis*), is a not uncommon summer resident of the region.—DAYTON STONER, *State University of Iowa, Iowa City, Iowa*.

***Lanius ludovicianus migrans* in North Dakota.**—A Shrike in the collection of Mr. H. V. Williams of Grafton, North Dakota, taken by him at that place on May 16, 1915, proves, on careful examination and comparison, to be an example of *Lanius ludovicianus migrans*. As there seems to be no previous record of this race from the State, we are, through the courtesy of Mr. Williams, now able to add this subspecies to the North Dakota list.—HARRY C. OBERHOLSER, *U. S. Biol. Survey, Washington, D. C.*

Bohemian Waxwings in Chicago, Ill.—On November 27, a friend and I had the good luck to find a large colony of Bohemian Waxwings (*Bombycilla garrula*) in Jackson Park, Chicago. All the birds were in exquisite plumage and were calmly enjoying some of the cedar-berries of which they are so fond. I estimated the colony to comprise about 300 birds. They were very tame and fearless, allowing one to approach within a very few feet of them before taking to flight. They remained in the vicinity the entire day. In view of the fact that up to this time we have had but very little bitter weather, the appearance of these visitors from

the north seems rather peculiar.—NATHAN F. LEOPOLD, JR., 4754 Greenwood Ave., Chicago, Ill.

The Bohemian Waxwing (*Bombycilla garrula*) at Chicago, Ill.—This morning, December 2, 1919, I was greatly interested in observing two Bohemian Waxwings feeding upon berries on the shrubbery right beside the street in Austin, Chicago. They were so tame that one could almost touch them. It is possible that the prevailing cold wave has brought many visitors from the north.—CHRESWELL J. HUNT, 5847 W. Superior St., Chicago, Ill.

Orange-crowned Warbler (*Vermivora celata celata*) in Massachusetts.—Occasionally the Orange-crowned Warbler is reported from Massachusetts, usually in November, and more than one is seldom seen. On November 20, in company with Mr. Charles Clark of Medford, I found a single bird near the shore of Jamaica Pond, where the species has been found irregularly during the past few years.—CHARLES B. FLOYD, Auburn-dale, Mass.

Fall Records of Mourning Warbler in Western Missouri.—About September 10, 1918, I observed a pair of Mourning Warblers, (*Oporornis philadelphia*) in a tangle of vines and brush, near Lexington, Missouri. At the time, I did not think it unusual, so did not record the exact date. On September 14, 1918, I collected an adult male of this species and prepared the skin for my cabinet. As far as I am aware, these constitute the only fall records for the Kansas City region.—E. GORDON ALEXANDER, Lexington, Mo.

Breeding of the Canadian Warbler and Northern Water-Thrush in New Jersey.—On July 4, 1919, the writer spent most of the day exploring Bear Swamp at the foot of the Kittatinny Mts. near Crusoe Lake, Sussex Co. Earlier visits had impressed us with the strong Canadian element in the flora of this swamp, so a further visit was made in the hope of seeing some interesting birds. Nor were we disappointed. The Canadian Warbler was a common bird, especially in the almost impenetrable clumps of *Rhododendron maximum*, no less than ten males and six females being noted. The only other breeding record for New Jersey was made by the senior author at Budd's Lake. (See 'Auk,' 1917, p. 24).

In the same swamp several singing male Northern Water-Thrushes had been seen on May 30, an ideal nesting place for this species. Four birds were noted on July 4, two obviously a pair together, which by their nervous actions and constant chips of alarm plainly had young in the vicinity. One bird was seen carrying food in its bill, which however, it subsequently swallowed without giving us a clue as to the whereabouts of its brood.

Late in May 1919, the senior author observed at least one pair of Water-Thrushes in a swamp near Moe, between Newfoundland and Greenwood Lake, which by their actions gave every reason to believe that they were

going to breed. There can be no reasonable doubt that this species breeds in northern New Jersey.—W. DEW. MILLER AND LUDLOW GRISCOM, *American Museum of Natural History, New York City.*

Hermit Thrush's Nest in Unusual Location.—At Jefferson Highland N. H., the Hermit Thrush (*Hylocichla guttata pallasi*) is a common summer resident. In the season of 1919, six singing males have been within hearing of my home, outnumbering the Robin two to one. And their disposition to sing freely at all hours of the day from an hour before sunrise to a half-hour after sunset, far surpasses that of our local Robins. One pair of Hermits has been located at the wood border below our garden and has been frequently seen in the garden and nearby orchard. When the season of ripe blackberries had come and I was gathering berries on August 9 in the plot of considerable size within our garden, I came upon a nest lodged on several of the canes within about a foot of their tips and *four feet* or so *above the ground*. One fledgling about ready to fly was in the nest, and I surmised that two or three others had probably already flown. The mother bird came and perched on the top of a bean pole standing, perhaps, thirty feet from her nest and showed no excited anxiety over my presence, continuing to hold her perch for some time and quietly giving her hissing call only. The next day when the blackberry plot was visited, the fledgling left the nest upon my approach. This nest rested firmly on several canes and was concealed from casual view by the leaves thickly surrounding it; while clusters of berries hung all about it, so it had not been discovered until on the day named the branches were drawn aside a little in gathering the fruit. The location in the plot of blackberries was on the outer edge southward, the plot having a width of about twenty feet, and was one hundred and fifty feet from the border of the woods, thus well up therefrom in the garden. The male bird continued singing up to August 16 inclusive; on that day I heard him sing a few times at 6 A. M. and again at 12 M., as he had done the preceding day. But this was the last voicing of his beautiful song for the season. Subsequently, an occasional call only was heard, and like his brother Hermits in the neighborhood he was for the most part silent, without even expressing himself in either of his four distinctly different call-notes.—HORACE W. WRIGHT, 107 Pinckney St., Boston, Mass.

Peculiar Nesting of Hermit Thrushes.—How far the nesting of birds may be influenced by friendly contact with man is worthy of careful study and observation by all bird lovers. The peculiar nesting plan of a pair of Hermit Thrushes, near the shore of Asquam Lake, Holderness, N. H., is of especial interest and may lead to other observations of a like peculiarity. In all our previous observations of their nesting, the nests were found among low bushes on damp ground. Mr. F. Schuyler Matthews writes that he has found them on low bushes near the ground. How far the following facts may have been influenced by association with man, can only be conjectured.

About the middle of June 1919, a pair of Hermit Thrushes took up their abode near a cottage on the shore of Asquam Lake, Holderness, N. H. The two ladies occupying the cottage are both musical and bird lovers. To the song of the thrush, when near the piazza, they responded by cheery word, song, or whistle in imitation of its song. Often times the piano and singing brought the bird near, and when the music ceased the male burst forth into song. The female was called "Mother" from the first, always in endearing tones, and, when addressed thus, would follow along beside the foot path, often within six feet of the ladies. In spite of the fact that near the cottage was a camp of over fifty boys and young men, some of whom were almost constantly passing along this path, the birds showed no fear.

The Thrushes soon began to alight on the rail of the piazza, or on the backs of the chairs, always giving forth their call for that attention which they were sure to get. Late in July, while sitting on the piazza, the writer saw the mother bird come with a leaf, alight on a chair, then fly up into the place where the Phoebe usually nests, and deposit the leaf. Careful inspection showed that she was building two nests, about two feet apart, separated by a timber, and sometimes deposited her leaf in one nest, and then again in the other. Suddenly she ceased to build, and we were expecting her to deposit her eggs and raise her young, as she still kept up her social relations with the family.

One day while the writer was watching for results, he saw her with a leaf pass up over the piazza; but she did not appear under it or near the nests partly or wholly built. This called for a change in the place of observation, and she was discovered building another nest in the tin gutter under the eaves of the second story and under the tip of an overhanging oak branch. Here she completed her nest, laid her eggs and hatched her young, only one of which she raised as a deluge of water in a heavy shower drowned the others.

This peculiar nesting seems worthy of note and may call out similar efforts by bird lovers to study the influence which kind treatment and attention may have on the habits of birds, and especially any change in the habits of their nesting.

Another instance of that familiarity which kindly attention brings into bird life happened in August of the same summer and on the same piazza.

A large bouquet of wild flowers was always kept in a jar on a table on the piazza. This attracted the attention of a Ruby-throated Hummingbird which at first made occasional visits, and later several visits a day to this bouquet, regardless of the number of people on the piazza. On its arrival all became quiet to watch its method of probing the flowers for food except for a light note, in imitation of its own, made by one of the ladies. When the false foxglove was in bloom and the jar was filled with them, the Hummingbird often visited them.

One day, when more than a dozen people were on the piazza, the Hummingbird came. One of the boys picked one of the blossoms and held it out in his fingers and the bird buried head and beak in the flower. Then

he dropped the flower and straightened out his finger, holding it steady and the bird perched upon it.

By similar treatment the Chipmunks in a few weeks eat from one's hand and often perched on the knee or shoulder. By kindness one learns the value of his bird and animal neighbors and is able to study the habits and photograph birds while nesting and feeding their young. This comradeship between man and bird friends should be more carefully practiced by all who live or camp in the woods in the summertime.

This would be more often the case if people would realize that a bird killed or frightened away is a permanent loss, but the bird who trusts brings to one a daily joy and gives a pleasant memory which cheers during the winter season and fills one with the joyous anticipation of meeting his bird friends the following summer.—EDWIN DEMERITTE, 210 *Drummond Place, Norfolk, Va.*

The Bluebird in Cuba.—On February 24, 1917, while riding by train through the suburbs of Havana, one of the first species we saw in Cuba was the familiar Bluebird (*Sialia s. sialis*). About seven birds, including several adult males, were perched on the telegraph wires near one of the local stations, and were, of course, absolutely unmistakable. As the Bluebird has been considered accidental in Cuba, this observation seems worthy of record.—W. DEW. MILLER AND LUDLOW GRISCOM, *American Museum of Natural History*.

Rare or Uncommon Birds at Rochester, N. Y.—At the request of Superintendent of Parks, C. C. Laney, the writers have for the past seven years kept careful record, both by chart showing daily records, and by card index of dates and other pertinent notes, of birds at Highland Park with frequent trips to Lake Ontario and nearby marshes. As the regular work of both takes us into the field from one to ten hours every day in the year an unusual opportunity is given for this study.

The following notes from our records seem worthy of publication.

Larus leucopterus. ICELAND GULL.—March 26, 1915, two birds flying low, near Virginia Ave., Rochester by Wm. L. G. Edson; December 15, 1918, one bird, Port of Rochester, Wm. L. G. Edson; December 23, 1918, one bird, Port of Rochester, on the Genesee River, near its mouth, in company with Herring and Ring-billed Gulls, in flight and at rest on the water within a minimum distance of twenty-five feet by Wm. L. G. Edson and R. E. Horsey. (This report was published in Bird-Lore's Christmas Census for 1918); January 26, 1919, one bird, Lake Ontario at Summerville, by R. E. Horsey.

Bartramia longicauda. UPLAND PLOVER.—Becoming rare. June 14, 1914, eight birds, near Rochester, N. Y., by Wm. L. G. Edson; July 14, 1915, three birds, near Rochester, N. Y., by Wm. L. G. Edson; June 14, 1917, two birds, near Rochester, N. Y., by Wm. L. G. Edson; May 8, 1918, one bird, near Rochester, N. Y., by Wm. L. G. Edson and R. E. Horsey.

Hesperiphona vespertina vespertina. EVENING GROSBEEK.—March 7 to April 9, 1916, from three to twenty-five birds noted on eight days by both Wm. L. G. Edson and R. E. Horsey.

Ammodramus savannarum australis. GRASSHOPPER SPARROW.—June 30 to August 17, 1914, eight reports, usually two birds, on a sandy hillside, east of Highland Park, Rochester, N. Y.; April 27 to August 19, 1915, thirteen reports, at the 1914 station and also a couple of miles east on the same range of hills; May 2 to July 2, 1916, a pair and young birds, 12 reports, same station as 1914 and also a mile to the west; May 10 to June 15, 1918, three reports, two birds, same station as 1914.

As a pair of these birds were to be found at the same place during the summers from 1914 to 1917, and young birds were noted in 1916 there is no doubt of their nesting there. In 1918 they were noted only in early spring and in 1919 not at all, although conditions at their station have not changed as far as one can see.

Cardinalis cardinalis cardinalis. CARDINAL.—December 10, 1913 to April 21, 1914, a male bird was noted almost daily in Highland Park and at the feeding stations; November 2, 1916 to March 25, 1917, same stations as above. Besides the writers, all Highland Park employees and many bird students saw these birds. The 1913-1914 bird was photographed and featured in one of the Rochester Sunday newspapers.

Vermivora leucobronchialis. BREWSTER'S WARBLER.—May 2, 1914, one bird, in "Warners Woods" Highland Park, Rochester, N. Y. at about 9.30 A.M., by R. E. Horsey, and from 11.20 A.M. to 12 M. by Wm. L. G. Edson and R. E. Horsey.

The identification points were; almost square patch of bright yellow on the wing, a black line through the eye, a black bill, tail grayish slate grading to grayish yellow-green on the back and slightly darker on the head, underparts light gray tinged with yellow. The points were noted with field glasses in bright sunlight. This record was published in 'Bird-Lore' for July-August, 1914.

Below are our dates for the Blue-winged and Golden-winged Warblers of which the Brewster's is a hybrid.

Vermivora pinus. BLUE-WINGED WARBLER.—September 15 and 16, 1914, one bird, Wm. L. G. Edson and R. E. Horsey; September 7 and 10, 1915, one bird, Wm. L. G. Edson.

Vermivora chrysoptera. GOLDEN-WINGED WARBLER.—May 24, 1913, one bird, R. E. Horsey; September 9, 1914, one bird, Wm. L. G. Edson; September 4, 1915, one bird, R. E. Horsey.

Dendroica discolor. PRAIRIE WARBLER.—May 9 and 10, 1916, two birds; May 7, 1918, one bird, Highland Park, Rochester, N. Y., Wm. L. G. Edson and R. E. Horsey.

On May 24, 1917, Wm. L. G. Edson, at the request of Assistant City Engineer, Mr. Skinner, visited the Rochester Sewage disposal plant at Brighton, where about 3000 warblers were feeding on the flies on the sludge beds.

It was quite cold for several days and on this day the thermometer registered 41 degrees and the birds seemed too cold to fly far.

Species identified were:

Mniotilta varia. BLACK AND WHITE WARBLER.— Fifty individuals.

Vermivora rubricapilla rubricapilla. NASHVILLE WARBLER.— Twenty-five individuals.

Compsothlypis americana usneæ. NORTHERN PARULA WARBLER.— Four hundred individuals.

Dendroica cærulescens cærulescens. BLACK-THROATED BLUE WARBLER.— One hundred individuals.

Dendroica magnolia. MAGNOLIA WARBLER.— Seventy-five individuals.

Dendroica fusca. BLACKBURNIAN WARBLER.— Two hundred individuals.

Dendroica virens. BLACK-THROATED GREEN WARBLER.— One hundred individuals.

Wilsonia citrina. HOODED WARBLER.— Twenty-five individuals.

Setophaga ruticilla REDSTART.— One hundred and twenty-five individuals.

Sitta canadensis. RED-BREASTED NUTHATCH.— Nested in Highland Park Pinetum, five young were raised in an Audubon Bird House No. 2, placed on an Electric-wire pole in the midst of thick hemlocks. Young birds in the nest on June 17, 1917. They left the nest on June 28, 1917 and the parents and young often came to the food station for suet.

This is the first record we have noticed of their breeding in Monroe County, N. Y.

Penthestes hudsonicus littoralis. ACADIAN CHICKADEE.— December 11, 1913, 1 bird; January 2 to 16, 1914, two birds reported four times, Highland Park, Rochester, N. Y. The birds were watched at a distance of from six to eight feet, and also shown to local bird authorities (mentioned in 'Birds of New York,' by E. H. Eaton).— WM. L. G. EDSON AND R. E. HORSEY, *The Herbarium, Highland Park, Reservoir Ave., Rochester, N. Y.*

Notes from St. Marks, Fla.— Following are records of birds seen in this vicinity during the past few weeks:

Limosa fedoa. MARBLED GODWIT.— A single bird, September 16, on a sand-bar near the lighthouse in company with Black-bellied Plovers, Turnstone, Least and Semipalmated Sandpipers and Red-backed Sandpipers.

Vermivora pinus. BLUE-WINGED WARBLER.— One taken October 9, in low pine and oak grove, bordering our village. But one bird seen. The first record for our county it is believed and an uncommon migrant in Florida.

Tyrannus verticalis. ARKANSAS KINGBIRD.— Two were observed October 11, in our village close by the railroad and near the river, invariably perched in topmost twigs of dead oaks that overlooked a grove of pine

saplings and a nearby tidal marsh. Both birds were taken and proved to be females of the year. One was in strong molt, very pale on head and but little yellow on under parts; the other had molt nearly completed and showed considerable yellow.

Piranga erithromelas. SCARLET TANAGER.—An adult male was taken October 25, showing a few flecks of red on breast, neck and belly and with a well defined line of the same from lower neck along each side to the rump. I have no previous record for the bird here.

Dendroica castanea. BAY-BREASTED WARBLER.—Several were noted October 25, in a mixed grove of oaks, pines and sweet gums; the birds seemingly affecting the deciduous trees. If the species occurs here regularly it has been overlooked heretofore.

On July 30, 1919, the following species were noted as having arrived along shore:

Macrorhamphus griseus griseus. DOWITCHER.—Four birds seen.

Pisobia minutilla. LEAST SANDPIPER.—About thirty birds. There may have been a few Semipalmated Sandpipers present but none identified positively.

Arenaria interpres morinella. RUDDY TURNSTONE.—A single bird seen. On August 11 these were seen in the same locality: Dowitcher, 10; Least and Semipalmated Sandpipers about 50 each; Ruddy Turnstone, 15.

On August 15-16 further additions were the following:

Pelidna alpina sakhalina. RED-BACKED SANDPIPER.—Five or six birds.

Totanus flavipes. YELLOW-LEGS, five.

Squatarola squatarola. BLACK-BELLIED PLOVER.—Thirteen birds seen of which five were in adult summer plumage.

Ægialitis semipalmata. SEMIPALMATED PLOVER.—Four.—JOHN WILLIAMS, *St. Marks, Florida.*

Bird Notes on the Wisconsin River.—The following notes were made during a canoe trip down the Wisconsin River from Kilbourn to Prairie du Chien, May 30, to June 4, 1919.

Centurus carolinus. RED-BELLIED WOODPECKER.—A fine male was seen about fourteen miles above Portage. Not noted again until the Spring Green bridge was passed; then fairly common along the remainder of the river.

Petrochelidon lunifrons lunifrons. CLIFF SWALLOW.—A colony of twenty nests was found on a cliff on the left bank about ten miles above Merrimac; all those examined contained eggs. The structure was interesting in that in every case advantage was taken of cavities existing in the rock for the body of the nest, only the characteristic tubular entrance being made of mud.

Ardea herodias herodias. GREAT BLUE HERON.—Above Merrimac a heronry of fourteen nests was found in a clump of trees that had been killed by the formation of Lake Wisconsin.

Protonotaria citrea. PROTHONOTARY WARBLER.—One was seen in some bushes in Lake Wisconsin above Merrimac. About five miles above the Spring Green bridge in a low heavily wooded spot, the characteristic sharp "tchip" of this species was heard. This bird was evidently looking for a nesting site as it flitted restlessly from tree to tree finally entering an old woodpecker's hole in a stub. The nest was empty. Another bird was seen feeding in a mass of driftwood at the river's edge.

Polioptila cærulea cærulea. BLUEGRAY GNATCATCHER.—Only two birds were met with; one about ten miles above Portage, and the other five miles above the Spring Green bridge.

Cardinalis cardinalis cardinalis. CARDINAL.—The first bird was heard singing about a mile below the Spring Green bridge. From this point on to the Mississippi it was fairly common.

Myiarchus crinitus. CRESTED FLYCATCHER.—One of the commonest birds along the river.

Thryothorus ludovicianus ludovicianus. CAROLINA WREN.—A single bird was heard singing about a mile from the Mississippi.

Tyrannus tyrannus. KINGBIRD.—On several occasions nests of this species were found on the lakes in northern Wisconsin, built in trees overhanging the water. I then thought that these open situations might have been selected to facilitate the hunting of insects. On the Wisconsin, three nests were found about three miles above Prairie du Sac in small trees standing in the water, one nest with two eggs being only eighteen inches above the water. At this place open fields came nearly to the water's edge. It accordingly appeared to me that occasionally at least, the Kingbird shows a decided preference for the vicinity of water. Only one reference on this subject has been found, although it is true that I have not made a thorough search of the literature: Barrows, in his 'Birds of Michigan', quotes Cheney on the Hamilton Lake region as follows: "This species might be considered almost aquatic in its nesting habits, as the nests were invariably placed in stumps projecting out of the water, often at a considerable distance from shore." — A. W. SCHORGER, *Madison, Wisconsin*.

Abundance of Periodical Cicadas, Diverting Attacks of Birds from Cultivated Fruits.—Before the ripening season of cherries this year, Mr. Hugh Wallis, restaurateur of Washington, D. C. reminded a colored employee that the time for screening the cherry trees was approaching. "No boss," was the reply "no need fo' dat dis yeah. De locus is comin'." Subsequent events proved the accuracy of this prophecy and suggested an inquiry into experience elsewhere in this regard. Only three replies were received from localities where the periodical cicada was really abundant, all of which testify to decreased bird damages. Mr. W. A. Taylor, Chief of the Bureau of Plant Industry, Washington, D. C. writes: "I have been watching with some interest a few raspberry bushes in my garden in the northern edge of the city not far from a piece of woodland in which the cicadas are abundant. It has seemed to me that the Catbirds and Robins which during

the past two or three years have devoted much time to raspberries have hardly touched them this season." J. L. Cowgill of West Falls Church, Va. states that he has noted "very little damage from birds this year on small fruits in the neighborhood. Two years ago, the birds destroyed a great many early cherries; this year practically no damage could be seen." Charles R. Posey of Baltimore writes: "the only fruit which I had an opportunity of observing during the visitation of the locusts was cherries, and I believe these to have practically entirely escaped damage by birds. The locusts were excessively abundant."

These observations give further support to a conclusion reached by most students of economic ornithology, that birds almost invariably specialize on the most abundant or most easily accessible food supply. This trait leads to destructiveness when the abundant food supply is a cultivated fruit or grain, as well as to usefulness when it is an injurious insect, or as in the present case, where the effect is diversion of attack from cultivated crops to an abundant insect of no decided economic significance one way or the other. — W. L. McATEE, U. S. *Biological Survey, Washington, D. C.*

Nomenclatural Casuistry.— Human laws in their origin and application rest upon a foundation of common sense, and what is true of jurisprudence is equally true of nomenclature. Its laws, canons or rules must meet the approval of the majority of the few who frame them and use them or they will fail in their purpose. Now and then they suffer through a strained interpretation and it is a case of this sort to which attention is here drawn because it threatens to open wide the door to all kinds of nomenclatural casuistry.

Recently, a western race of the Red-headed Woodpecker has been described (Oberholser, *Canadian Field-Nat.* XXXIII, September 1919, pp. 48-50). Whether the race is worthy of recognition need not now concern us, but a name has been selected that was used purely inadvertently in a local list. Even the describer admits this for he begins by saying: "The name *Melanerpes erythrophthalmus* is apparently a lapsus calami for *Melanerpes erythrocephalus* and there is no other evidence that the author intended to describe a new species or subspecies. The name *Melanerpes erythrophthalmus* does not occur in the index but the species is duly entered there as *Melanerpes erythrocephalus*." Farther quotation and farther comment would seem superfluous for Article 19 of the International Rules of Nomenclature is applicable both in the spirit and in the letter. Here is a very obvious lapsus calami according to contemporaneous evidence whether the slip be of the pen or of the brain that directed the pen. We all have such slips and perhaps Art. 19 is designated to protect frail humanity. To put another construction upon this case is to make a plaything of nomenclature and set us wondering how far its rules may be twisted into producing fantastic results. Let it not be forgotten that we need a safe and sane nomenclature. — JONATHAN DWIGHT, M. D., 34 E. 70th St., New York City.

Supplementary Note on J. P. Giraud.—Dr. C. W. Richmond has called my attention to another new species proposed in Giraud's 'Birds of Long Island,' namely *Picus bairdii* on page 178. It is mentioned incidentally under the Downy Woodpecker from which it differs in having the upper part of the head red — undoubtedly the young of that species. Dr. Richmond further informs me that Baird refers to this species in the manuscript catalogue of his collection crediting it to Bell. The latter probably intended to publish it but never did so and Giraud in mentioning it merely referred to a name no doubt in circulation among contemporary ornithologists. Unwittingly, however, Giraud has added enough description to remove the name from the class of nomina nuda and as it has seventeen years priority over *Picus bairdi* Malherbe which is current as the subspecific name of the Texas Woodpecker, *Dryobates scalaris bairdi*, it precludes the use of the latter.

As Dr. Oberholser (Proc. U. S. Nat. Mus. 41, pp. 139-159, 1911) has separated the Texas Woodpecker into several races one of his names will be applicable to this bird if we follow the A. O. U. Check-List in regarding his several races as identical and as *cactophilus* comes first, the Texas Woodpecker will be known as *Dryobates scalaris cactophilus*. Should we regard all of Dr. Oberholser's races as tenable as has been done by Mr. Ridgway in his 'Birds of North and Middle America,' then the Mexican form to which he restricted *bairdi* is without a name and we should suggest that it be called *Dryobates scalaris giraudi* nom. nov. in commemoration of his valuable contribution to Mexican ornithology, it being now satisfactorily proven that most if not all of his "new birds" really came from that country.

Dr. Richmond states in reference to the types of Giraud's species that they are all in the U. S. National Museum. Those that were supposed to be lost a few years ago had been twice catalogued and their identity temporarily concealed.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

RECENT LITERATURE.

Van Oort's 'Birds of Holland.'¹— A year ago we had the pleasure of noticing the appearance of parts 1 and 2 of this important work. We are now in receipt of parts 3 and 4 which, however, were issued in May last. These fully maintain the high standard set by the first parts and both plates and letter press are excellent.

The plan of the work was fully set forth in our previous notice so that it is not necessary to repeat it here. The present instalments complete the Cormorants, cover all of the Ardeiformes, the Flamingo and the Swans. The twenty plates, 10 $\frac{3}{4}$ by 14 inches are admirably colored and represent the principal variations in plumage to be found in each species. As might be expected the subjects lend themselves to more artistic treatment than those of parts 1 and 2 and many of them are a distinct improvement in this respect. The text runs from page 57 to 120 and is beautifully printed and typographical errors seem to be rare. An errata page is included in this fasciculus calling attention to the presence of parentheses about the names of authors in a number of cases where they should have been omitted — the result of an effort for uniformity on the part of the printer or proof-reader which is the despair of editors in America as well as in Holland! We trust that Dr. Van Oort may be enabled to proceed rapidly with the remaining parts of his great work.— W. S.

Taverner's 'Birds of Eastern Canada.'²— This notable work has been prepared to meet a growing demand for a handbook that will present in concise form the more important information on the habits and distribution of the birds of East Canada and keys and descriptions that will enable one to identify them. In providing for all these needs we think that the author has been remarkably successful.

The key carries one as a rule only to the familus but the numerous figures with which it is supplied illustrate the heads of several of the most striking species in each. In large families like the Warblers and Finches, however, the reader must work from the several descriptions without any key to guide him. The descriptions are usually divided into two sections entitled "Distinctions" and "Field marks" and there are two others "Nesting" and "Distribution." There is also a paragraph headed "Subspecies" in which the geographic races are briefly mentioned after which comes a

¹ Ornithologia Neerlandica. De Vogels van Nederland door Dr. E. D. Van Oort. Directeur van's Rijks Museum van Natuurlijke Historie te Leiden. Met ongeveer vierhonderd gekleurd platen. Martinus Nijhoff. Lange Voorhout 9, The Hague, Holland. Aflevering 3 and 4.

² Birds of Eastern Canada. By P. A. Taverner. Memoir 104, No. 3, Biological Series. Canadian Geological Survey. Ottawa, 1919. pp. 1-297, figs. 1-68, colored plates I-L. Price 50 cts.

general account of habits and "economic status." The English name of the A. O. U. 'Check-List' is given at the head of the section relating to each species followed by other vernacular names current in the region covered by the work including the French name, and finally the *binomial* Latin name of the 'Check-List.'

The general information presented under the various species is as a rule well selected and covers most of the questions that arise in the minds of bird students seeking information. In the case of the Purple Finch we notice a not unnatural criticism of the name purple as applied to this species which, as Mr. Taverner says, is more of a magenta. Dr. Spencer Trotter however, ('Auk,' 1912, p. 255) has called attention to the fact that it was the famous Tyrian purple after which the bird was named not the violet purple of today. The colored plates by Mr. Frank C. Hennessey are very attractive and the postures of the birds usually good, some of them like the Kinglets rather daring in their originality. Mr. Hennessey evidently studies his birds and his paintings are his own interpretation of what he sees rather than copies of conventional attitudes. We need just such effort in ornithological illustration.

Having given our hearty approval of Mr. Taverner's book so far as the general reader, is concerned which, after all, is the main point in its production, we must take exception to his attitude on some minor or more technical points.

As is well known, he is opposed to the use of subspecies and his effort to dispense with them in his nomenclature and at the same time explain them in a sort of foot note has not been very happy. The non-technical reader, who may be interested in Pine Grosbeaks, for instance, is almost certain to regard the Pine Grosbeak, *Pinicola enucleator*, which heads the paragraph as a different bird from the Canadian Pine Grosbeak, *P. e. leucura*, mentioned in small type at the end. This matter, however, has been thoroughly discussed elsewhere ('Auk,' 1918, pp. 446-449). In this connection Mr. Taverner constantly makes use of an unfortunate term "type form" when referring the first described race in a group of con-specific forms. This race is of exactly the same rank as any of the others, and this term, the use of which we hoped had died out, is distinctly misleading. The word type, it seems to us had better be restricted to the specimen which was originally described and it remains the same whether the form which it represents becomes a species or a subspecies. Some authors, as Mr. Gregory M. Mathews cite subspecies (i. e. trinomial names) as types of genera and these may or may not happen to be what Mr. Taverner calls the "type form," thus is the matter further complicated.

Another unfortunate feature of this work is the practice of interpolating generic or group headings at various points throughout the book while adjacent genera or groups are not accorded such distinction. For instance, there is a heading on page 83, "White Herons" and under it we find not only the Egret and the Little Blue Heron but the Green and Black-crowned Night Herons as well. We are supposed to include only the first two but

there is nothing to indicate this to the uninitiated. Whoever prepared the systematic index on pages 29 to 39 completely misunderstood this arrangement just as we supposed a general reader would do. The heading "Genus *Acanthis*," which was intended to include only the Redpolls but which is followed by all the other Fringillidæ without a break has been carried on to the following page of the index by whoever prepared it as "Genus *Acanthis* concluded" under which we find the Swamp Sparrow, Fox Sparrow, etc.!

While the general text is apparently free from typographical errors the introduction gives evidence of very hasty preparation, first names and initials of writers are often omitted and the names of such well known ornithologists as Robert Ridgway and C. F. Batchelder are consistently misspelled.

All these matters are however trivial faults in an attractive and well gotten-up volume.—W. S.

'The Birds of North Carolina.'¹—One of the most notable contributions to North American ornithology during the past year is the volume by the Messrs. Brimley and Mr. T. Gilbert Pearson on the birds of North Carolina. Adequate State bird books have heretofore been issued only by the more northern commonwealths but North Carolina now comes to the fore with one of the most satisfactory works of this kind that has yet appeared—a work that is a credit to the authors, the publishers and the State authorities and Audubon Society, who made its publication possible.

The text consists of a historical sketch by Mr. Pearson followed by a consideration of Life Zones and Distribution by C. S. Brimley. Then come keys for identification and a systematic consideration of the 342 species and subspecies of birds found in the State. The appendices comprise a bibliography, a set of migration tables covering thirty-one years' observations at Raleigh by the Messrs. Brimley and Mr. S. C. Bruner, similar to those published by one of the authors in 'The Auk' for 1917. There is also a Glossary and no less than three indices. For some reason many editors fail to realize that a single index is twice as useful as two and that there is no possible advantage in the separation of the references which only makes it more easy for one to search in the wrong place for what he is seeking.

The main text contains under each species, a description taken from Chapman's 'Handbook,' a brief statement of the general range and range in North Carolina, followed by an account of the bird in the State—its habits, abundance, records of captures of specimens of rare species, nests and eggs etc. The plan adopted seems admirable and the method of handling the data leaves little to be desired. One or two species seem to rest upon rather slender evidence as birds of North Carolina, as for instance, *Puffinus*

¹ Birds of North Carolina. By T. Gilbert Pearson, C. S. Brimley and H. H. Brimley. Volume IV. North Carolina Geological and Economic Survey. Raleigh, 1919. Royal 8 vo. pp. i-xxiii, + 1-380, pl. 24, figs. 275.

borealis, identified by Atkinson from the length of a wing which he saw but the dimensions of which are not given; and *Clangula islandica* entered on the basis of a specimen reported by Cairns although another specimen obtained and identified by the same collector proved to be *C. c. americana*. There are also a few statements that have evidently been made on very questionable authority and had better have been omitted, as that regarding the breeding of the Bobolink in Louisiana and Florida.

Mr. Bruce Horsfall has contributed twenty-three of the color plates and some of them are among the best of his ornithological illustrations. Others are poor; the figure of the Yellow-throated Warbler being hopelessly out of proportion to its surroundings while the Fox and White-throated Sparrow are noticeably stiff. The other colored plate, that of the Swallow-tailed Kite, and 275 text figures mostly of the heads of the birds are by Brasher, although the fact is not mentioned anywhere in the volume. The text figures are very useful as a means of identification and are very well done with a few exceptions. In the Herring Gull the color is very misleading the back being no lighter than the lower parts.

The bibliography is introduced with a rather unfortunate statement to the effect that it includes "all known papers containing records of birds or their eggs from North Carolina." Most bibliographers would be chary of making such a claim and upon turning over a small collection of separata on the birds of the State which happens to be at hand we find one that has escaped the compiler. It is by C. J. Pennock, 'Bird Notes from Pinehurst, North Carolina' published in the 'Wilson Bulletin,' No. 74, and is an annotated list of 67 species containing some records that might well have been included in the State report. There is also an account of Swans on Currituck sound from 'Forest and Stream' for April, 18, 1916, which has been overlooked and there are doubtless other North Carolina notes in the same journal. A note on a curious hybrid duck (Mallard and Green-winged Teal) from North Carolina in 'The Auk' for 1903 would seem worthy of mention but it has apparently also been overlooked by the authors. For the general purposes of such a work however, the bibliography is satisfactory.

The names of the authors of this volume have so long been identified with North Carolina ornithology that it is a gratification to find the results of their labors preserved for future generations in such satisfactory form—a gratification that they no doubt share equally with the general public. Let us hope that this publication may prove the forerunner and model for State bird reports for some of the other southern commonwealths which have as yet issued no works of this kind.—W. S.

Hine on Birds of the Katmai Region, Alaska.¹—In this paper, No. X of the scientific results of the Katmai Expedition of the National Geographic

¹ Birds of the Katmai Region. By James S. Hine. The Ohio Journal of Science, June 1919. pp. 475-486.

Society, Mr. Hine presents an annotated list of thirty-seven species of birds secured by the party with notes on a number of others which he observed.

The notes are full and contain much of interest in regard to the habits and distribution of the species considered. Unfortunately there is no mention of the length of time that was spent in the district nor any sort of itinerary or even an indication of where Katmai might be. This is, of course, all contained in some of the other reports but as no reference to them is here given, the ornithologist who reads Mr. Hine's paper must needs do without this information. We notice several departures from the nomenclature of the A. O. U. 'Check-List' but no reason for them is advanced by the author—as for instance why he regards the Short-billed Gull as a subspecies of the European *Larus canus* or why he prefers the generic name *Glottis* for the Greater Yellow-legs and *Heteroscelis* for the Tattler. When we have an authoritative and generally used list it seems desirable to follow its nomenclature in a paper of this sort or at least to state when and why we depart from it.

The illustrations consist of three text figures from photographs and two full page half-tones of Cormorants and Puffins, Sparrows and Ptarmigan, from drawings.

Mr. Hine's paper is a welcome contribution to the ornithology of the great Alaskan region which still offers many opportunities for ornithological exploration.—W. S.

Witherby's 'Handbook of British Birds.'¹—Part 4 of this notable work completes the Wagtails and covers the Creepers, Nuthatches Titmice, Kinglets and Shrikes. There is a colored plate of the Tits and two half-tone plates illustrating the seasonal plumages of the White and Pied Wagtails and the heads and juvenal plumages of various species, as well as numerous text figures.

The treatment follows the plan of the earlier parts and is quite up to the standard there established. Under the Creepers we notice one statement to which we would take exception, namely the disposition of the American Brown Creeper as a subspecies of *Certhia brachydactyla*. This on geographical grounds alone would seem very unlikely, and Dr. H. C. Oberholser has recently shown ('Auk,' October, 1918) that its relationship was, as we had always supposed, distinctly with *C. familiaris*. Mr. Witherby doubtless overlooked this paper as he states that this part is brought up to the date of July 31, 1919.

Part 5 completes the Shrikes and covers the Waxwing, the Flycatchers and most of the Warblers. The two latter groups are regarded as forming part of one great family to which belong also the Thrushes and most of the

¹ A Practical Handbook of British Birds. Edited by H. F. Witherby. Part 4 (pp. 209–272), September 26, 1919. Part 5 (pp. 273–336) November 5, 1919. Witherby & Co., 326, High Holborn, W. C. 1, London. Price 4s. net per part.

"Timaliidae," and for which the name *Muscicapidae* is adopted. This will seem like lumping with a vengeance to most of our readers but let them try to define Thrushes and Flycatchers, when the species of the World are concerned or to separate the Warblers from the Timaliidae, or the latter from the Thrushes, and they may come to agree with the plan that Mr. Witherby and his associates have adopted. The other alternative would be to propose a lot of small families composed of the species that will not fit into the several groups above mentioned as strictly defined — a course which seems to us much more objectionable than combining them under one head. Nevertheless as the possibilities for increasing the number of genera which now seems to be such a fascinating pastime, begin to wane, we may expect activities in the discovery of new families! Two plates of Warblers, a name which still has a meaning even if the species are included in an all-embracing "*Muscicapidae*," one colored and one uncolored, illustrate this part. American bird students will of course understand that in the above remarks "Warblers" and "Flycatchers" refer to the old world groups so called, not to the entirely different families to which these names are applied here. The Kinglets and Gnatcatcher which we have usually regarded as belonging with — or close to — the Old World Warblers, are placed with the Titmice in Mr. Witherby's work.

The authors have now covered one fourth of the British species and we wish them all speed in completing their task.— W. S.

A Geographical Bibliography of British Ornithology.¹— The present work is a continuation of Mullens and Swann's 'Bibliography of British Ornithology' already noticed in these columns (Auk, 1916, p. 443, 1917, p. 227 and 1918, p. 98). That work has been styled the "biographical volume" since it consisted of biographical sketches of the authors with lists of their publications. The present undertaking on the other hand, is geographic, the titles of the articles being arranged chronologically under the various counties to which they refer, beginning with such as relate to the British Isles as a whole.

American ornithologists will be interested in the statement made in the advertising circular to the effect that "hitherto the only work dealing solely with the subject has been Elliott Coues' Ornithological Bibliography (Fourth Instalment): being a list of Faunal Publications relating to British Birds, Washington, 1880," and those who are not already acquainted with it will enjoy reading the memorial addressed to Dr. Coues by the leading zoölogists of England upon the completion of the first instalment of his

¹ A Geographical Bibliography of British Ornithology from the Earliest Times to the End of 1918. Arranged under Counties. Being a Record of Printed Books, Published Articles, Notes, and Records Relating to Local Avifauna. By W. H. Mullens, M. A., LL. M., F. L. S., M. B. O. U., H. Kirke Swann, F. Z. S., and Rev. F. R. C. Jourdain, M. A., M. B. O. U. Witherby & Co., 326 High Holborn, London. 1919. Svo. Part I, pp. 1-96. To be Completed in Six Bi-monthly Parts. Price 6 Shillings net per part.

'Bibliography' — that relating to North America which appeared as an appendix to his 'Birds of the Colorado Valley' — (see Bull. Nuttall Ornith. Club, 1879, p. 176.) The receipt of this memorial doubtless had much to do with Dr. Coues' preparation of the British bibliography above alluded to.

British ornithologists are certainly to be congratulated upon the publication of such an admirable series of bibliographies as Messrs. Mullens and Swann are compiling. We wish that such a publication were possible in America, where we have likewise had practically nothing in the way of a general bibliography since Dr. Coues ceased his labors in this field.— W. S.

Birds of the Expedition to Korinchi Peak, Sumatra.—The report¹ by Messrs. Robinson and Kloss on the birds collected by them in the Korinchi district of Sumatra, constitutes probably the most extensive account of the birds of the island that has yet appeared. They list 186 species with some additional ones secured on the coast at Pasir. Ganting, and under each one is given a detailed account of the specimens, synonymy and much critical discussion of relationship, plumage etc.

The altitudinal distribution of the species is considered at length, both in the introductory portion and in tables at the end, and comparisons are made with the avifauna of Java and Borneo. The authors' conclusions are that the highest elevations are inhabited by a fauna almost identical with that found on the high peaks of Java and that it is very much more distantly related to that of similar zones on Kinabalu, Borneo. There is also a small proportion of species found on the Himalayas and the mountains of Tenasserim and the Malay peninsula which does not spread to Java or Borneo. The very distinct nature of the Kinabalu fauna is especially emphasized.

There are four excellent colored plates and a bibliography of 22 titles of "the principal articles dealing with the avifauna of Sumatra," among which we fail to find the account of the collection made by Messrs. Harrison and Hiller published by the reviewer in the 'Proceedings' of the Academy of Natural Sciences of Philadelphia for 1902, pp. 670-691.

The new forms proposed by Messrs. Robinson and Kloss are as follows: *Chotorhea chrysopogon latus* (p. 141), Bukit Tangga, Negri Sembilan, Fed. Malay States; *Pnoepyga pusilla harterti* (p. 205), Gunong Ijau, Larut Range, Perak; *Notodela diana sumatrana* (p. 215), Korinchi; *Tephrodornis pelvica annexens* (p. 222), Lamra, Trang; *Parus major malayorum* (p. 226), Korinchi; *Bhringa remifer attenuata* (p. 235), Bukit Fraser, Selangor-Pahang boundary; and *Zosterops difficilis* (p. 250), Dempo.

The paper closes with a nominal list of the species certainly known to occur in Sumatra which numbers no less than 526.— W. S.

¹ Results of an Expedition to Korinchi Peak, Sumatra. Part II: Birds. Jour. Federated Malay States Museums. Vol. VIII. pp. 81-284. December, 1918. Singapore. Price \$4.00.

Swann's 'Synoptical List of the Accipitres.'—This work¹ resembles Sharpe's 'Hand-List' in general style but has the distinct advantage of adopting the trinomial system so that we have a means of distinguishing mere geographical races from quite distinct species. Of course, there are always differences of opinion as to the rank of certain forms but in the majority of cases there will be uniformity of judgment upon this matter.

The descriptions that are given are in the nature of keys, and as they are very brief, and based upon adult birds, they will we fear, be of very little value in a group which offers such a variety of plumages as do the Accipitres.

The classification seems to follow Sharpe pretty closely but there are a number of nomenclatural changes in conformity with recent proposals though the author's position in some cases we are at a loss to understand. For instance, he uses *Ægyptius* for *Vultur monachus* of Linnæus realizing the impossibility of employing *Vultur* for this species inasmuch as it was not among the original species quoted by Linnæus under this generic name. This is quite correct but Mr. Swann proceeds to drop *Vultur* entirely which is, of course, impossible, while to add to the inconsistency, he retains the family name Vulturidæ. Again in several instances he ignores the International Code and the opinions of the Commission. Thus the type of *Catharista* is, by the Code, *Vultur aura* Linn., and it thus becomes a synonym of *Cathartes* while the type of *Morphnus* is similarly *Falco urubitinga* Gmel., yet in both cases Mr. Swann uses these names in their former application. Either the author has carelessly overlooked these matters or he is cutting loose from the recognized rules of nomenclature, an unfortunate procedure in these days, and one which materially mars the value of his work.

We wonder somewhat at his disposition of *Urubitornis solitarius* Tschudi, as a subspecies of *Harpyhaliaetus coronatus*. The name was regarded as a synonym of *H. coronatus* in the 'British Museum Catalogue' and in Sharpe's 'Hand-List' but we always were in doubt as to whether Dr. Sharpe had examined any specimens, as the species seems to be a rare one. The two in the collection of the Philadelphia Academy seem to be quite distinct from *H. coronatus* both specifically and generically.

In spite of our criticisms, Mr. Swann's work is a distinct advance upon anything that we have yet had and will be of the greatest assistance to students of the Accipitres. It places the group upon such a basis that doubtful points both of taxonomy and nomenclature can easily be worked out and the results embodied in an appendix, bringing it fully up to date. It is toward this end that our remarks have been directed.—W. S.

¹ A Synoptical List of the Accipitres (Diurnal Birds of Prey) Comprising Described Species and Subspecies with their Characters and Distribution. By H. Kirke Swann, F. Z. S. London: John Whelden & Co. Price 4 shillings per part. Part I. July, 1919. pp. 1-38; Part II, pp. 39-74, with reprint of pp. 15-16 and a page of addenda et corrigenda for Part I. November 7, 1919.

Burns' 'Ornithology of Chester County, Pennsylvania.'¹ — Probably no county in the United States can boast of as many bird-lists as Chester County, Pa., and in the little volume before us we now have another, more pretentious than any of its predecessors, and aiming to embody all the information which they contain as well as much original material.

Mr. Burns has been engaged in preparing this work for some years past, and his personal experience, extending over a period of thirty-five years, combined with his extensive knowledge of the work of his predecessors and the local literature well fit him for the preparation of such a volume.

The exceptional development of ornithological interest in Chester County seems to be due largely to the Quakers who settled much of the eastern and southern portions and who from the earliest times possessed a strong interest in nature study and a full appreciation of its importance. A glance at the list of former scholars of the famous Quaker boarding school at Westtown, will show the names of nearly all of the early ornithologists of the Philadelphia region, from Thomas Say down, and even today Westtown graduates constitute one of the strongest elements in the makeup of the Delaware Valley Ornithological Club.

Part I of Mr. Burn's little work is entitled "Physical Features, Habitats, Biographical Notes and Review of Faunal Lists." All of these topics are briefly covered and illustrated by portraits of several of the more prominent ornithologists and a picture of the Westtown School in 1810.

Part II consists of an annotated list of 247 species with a hypothetical list of 16 more. Then follows a bibliography of 19 of the most important county lists, published and manuscript, and a series of notes referred to by numbers in the main text. A number of excellent half-tone reproductions of photographs of nests, eggs and young birds of various species by Thomas H. Jackson and Alfred C. Redfield illustrate this part. There are no keys or descriptions whatever and there is no call for them in a work of this kind, but the publisher in his advertising notice states that it contains "complete descriptions of the 250 bird species" of the County. With this flagrant misstatement the author of course had nothing to do.

The text under each species consists of the A. O. U. name, additional local vernacular names, a careful statement of the character of its occurrence, distribution and abundance in the county, and any important quotations or references to the published literature. Also in the case of migrants extreme dates of occurrence and averages covering the long period of Mr. Burns' observations, with the exact dates of capture or observation of rare species. The plan is excellent and but little published information seems to have escaped the author. We fail however, to find mention of the capture of the Brewster's Warbler ('Auk,' 1888, p. 115) or the observation of the Lawrence's Warbler ('Auk,' 1912, p. 247) in the county, both

¹ The Ornithology of Chester County, Pennsylvania. By Franklin Lorenzo Burns, in co-operation with local ornithologists. Boston. Richard G. Badger, The Gorham Press. 1919, 8vo. pp. 1-122. 21 half-tone illustrations. Price \$2.00 net.

of which seem worthy of mention, while the recent capture of the Red Phalarope ('Auk,' 1919, p. 419) was of course, too late for inclusion. The omission of the Gray-checked Thrush from the main list is surprising as it is far more common in eastern Pennsylvania than the Bicknell's and nearly or quite as abundant as the Olive-back. There are a number of Chester County specimens of the Gray-check in the collection of the Academy of Natural Sciences of Philadelphia.

Mr. Burns' summary of our knowledge of the ornithology of Chester County emphasizes the fact that it is still limited to the southern and eastern portions and that we have no intimate or detailed information on the bird life of the northern townships. It is regrettable that this region could not have been carefully explored and the results of the investigation included in the present volume, thus making an important addition to the historic work of the earlier writers.

The little book is well printed and attractively gotten up but we regret to say lacks the supervision of a competent editor, with the result that no less than 24 of the scientific names are misspelled, while those given for the Night Heron and Creeper are the names of the European races and not the American. The text also is often somewhat faulty in construction and occasionally ungrammatical. These faults however, do not detract from the ornithological value of the work but are regrettable as they could have been so easily eliminated and the literary character of the book been thus made fully equal to the scientific.—W. S.

Mailliard's 'Notes on the Avifauna of the Inner Coast Range of California.'¹—In this paper, Mr. Mailliard describes the results of field work carried on by himself and his assistant, Mr. Luther Little, from Mt. St. Helena, Napa County, to Mt. Sanhedrin, Mendocino County, California, during 1919. The physical features of the various localities are described and lists of the species observed are given, while the details of distribution are considered at length and much information is presented on the habits of several species.

Many of the localities being nearly upon the dividing line between the humid coast environment and the dry interior, present peculiarly interesting conditions, and Mr. Mailliard has made a valuable contribution to the zoogeography of the region. A table at the end of the paper shows at a glance the species seen and taken at each of the nine stations where stops were made.—W. S.

Bailey's 'The Raptorial Birds of Iowa.'²—At the time of his death the late Dr. Bert Heald Bailey had nearly completed a report on the birds

¹ Notes on the Avifauna of the Inner Coast Range of California. By Joseph Mailliard Proc. Calif. Acad. Sciences. Fourth Series, Vol. IX, No. 10, pp. 273-296. November 25, 1919.

² The Raptorial Birds of Iowa. Bulletin No. 6, Iowa Geological Survey. By Bert Heald Bailey, M. S., M. D. Des Moines, 1918. pp. 1-238, figs. 93. [Received November, 1919.]

of prey of the State of Iowa. His manuscripts have been edited and completed by his student and co-worker, Miss Clementina S. Spencer and have now been published by the Iowa Geological Survey in an attractive volume which is a credit to all concerned.

The economic statements are taken largely from Fisher's 'Hawks and Owls of the United States,' but under each of the commoner species there is a table of stomach contents of a dozen or so specimens examined by the author. The consideration of the characters and distribution of the species occupies the bulk of the volume and as a rule seems to be very full and accurate. There is a brief summary of field characters and a fuller description of each species with measurements. Then follows a statement of its general range and a detailed account of its distribution and habits in Iowa, with a map showing county records and breeding localities, and a full bibliography. The illustrations consist of excellent half-tones of mounted birds in the museum of Coe College, some characteristic views of Iowa scenery and a portrait of Dr. Bailey.

There is a lack of consistency in the treatment of some portions of the work, some of the distributions being taken direct from the A. O. U. 'Check-List' while others unfortunately are too general, and consequently somewhat inaccurate or misleading. The northern race of the Turkey Vulture is thus credited with ranging to South America and the Swallow-tailed Kite is stated to breed from the northern United States southward. In the bibliography the authority for the scientific name is quoted in one reference and not in the next without any uniformity, while Dr. Bailey's proposed new race of the Broad-winged Hawk, which has been since regarded as merely a melanistic form, is given as a "new subspecies" in this publication whereas it was described and named in 'The Auk' for January, 1917.

These are, however, minor matters and do not detract from the usefulness of the publication in providing a means for the recognition and proper appreciation of the birds of prey, which is a necessity on the part of farmers and others, before any progress can be made in the destruction of the noxious species and the protection of those which are beneficial.—W. S.

Mrs. Farwell's 'Bird Observations near Chicago.'¹—The late Mrs. Ellen Drummond Farwell, a director and vice-president of the Illinois Audubon Society, was an ardent bird lover and a student of wild bird life. Her note books kept in diary form were replete with observations relating mainly to birds of the Chicago district, although there were two short lists of species observed in Georgia as well as notes on birds seen in Europe.

All of these have now been published in book form, with a foreword by John V. Farwell and an introduction by Mary Drummond. They show a keen power of observation and contain many facts of interest not only to

¹ Bird Observations near Chicago. By Ellen Drummond Farwell. Introduction by Mary Drummond. With illustrations. Privately printed. [1919] pp. 1-192.

the local bird student but to others interested in the broader study of the habits and songs of the species to which they refer.

The volume, which is privately printed, is a beautiful example of the bookmaker's art, with perfect typography and excellent half-tones of many of the commoner birds or their nests, from photographs by Henry Emerson Tuttle. There is also a frontispiece portrait of Mrs. Farwell, to whom this little book is a most fitting memorial.— W. S.

Hudson's 'The Book of a Naturalist'¹— Mr. Hudson's many readers will be glad to learn of the appearance of another of his delightful volumes. The sketches which it includes appeared originally in various of the English magazines and hence have probably been read by few on this side of the Atlantic. Almost all of them deal with English country life though there are occasional allusions to Patagonia, with which country the author's name is so closely associated. There are in all twenty-nine chapters treating of the whole range of out-door life — mammals, birds, reptiles, insects, wild flowers, earthworms and even the potato, while a good index guides one to the many interesting and important observations which lie hidden away in the pages. The volume is hardly on a par with its predecessors and while some of the sketches are full of the great out doors of which the author loves to write, they give one the impression of being a collection of odds and ends which had not yet been brought together in book form. Only three of the present sketches relate to birds, two of them dealing with herons and heronries.— W. S.

Dixon on Wild Ducks in a City Park.²— Every visitor to the city of Oakland, California will be shown Lake Merritt, a beautiful body of water of about a square mile in extent, situated in the heart of the city and famous as the winter resort of thousands of wild fowl. In the present paper, Mr. Dixon describes the winter bird-life of the lake illustrating his account with a number of excellent photographs.

Lake Merritt is the oldest State game reservation in California, having been established in 1869. No gunning whatever is allowed there and dogs not in leash are not permitted in the park, furthermore a large area of the lake is shut off by a log boom and boating there in the winter is forbidden. Last but not least about four tons of whole barley are fed to the ducks every winter at a cost to the city of about \$400.

As a result some 2500 wild ducks are to be found on the lake throughout the winter from October to the end of the shooting season, in February, when it is safe for them to scatter over the country for a few weeks before returning north. Large numbers of the birds come out on the lawns adjoin-

¹ *The Book of a Naturalist.* By W. H. Hudson. George H. Doran Company, New York. 8vo. (1919) pp. i-viii, 1-360.

² *Wild Ducks as Winter Guests in a City Park.* By Joseph Dixon. National Geographic Magazine, October, 1919. pp. 331-342.

ing the lake to rest in the sun and Mr. Dixon's photographs show them close to the houses and driveways apparently entirely devoid of fear.

The most abundant species is the Pintail, followed by the Canvas-back, Baldpate and Shoveller. Other species of ducks occur, however, as well as Grebes, Coots, Gulls and Killdeers. The pleasure derived by the thousands of persons who visit the lake to watch the ducks, and the protection of the birds as a factor in the preservation of the species are well worth the comparatively small expense and trouble. Why do not other favorably located communities try the same experiment? — W. S.

Recent Circulars by Forbush.¹—The Massachusetts Department of Agriculture has recently published two excellent educational pamphlets by the State ornithologist, Mr. Edward Howe Forbush. One of these deals with outdoor bird study and is full of practical hints as to where and how to study wild birds. The other describes the building of bird houses and nest boxes. It seems that the demand for such publications is never satisfied, every year sees the additions of thousands of persons to the army of bird students and it is fortunate that there are State governments able and willing to supply the literature that they desire. It would seem, however, that some of the best of these pamphlets might be stereotyped so that an unlimited number of copies could be printed without the expense of resetting the type.—W. S.

The Birds of the Albatross Expedition of 1899-1900.²—The long delayed report on the birds obtained on the cruise of the "Albatross" to the southern Pacific in 1899 and 1900 has at last appeared, the systematic study of the collection being by Alexander Wetmore while the introduction and field notes are contributed by Charles H. Townsend one of the naturalists who accompanied the expedition and made the collection. Specimens were obtained from thirty-three islands some of which were visited by naturalists for the first time. Representatives of ninety-three species or subspecies were collected and of these the following fourteen are described as new:—*Ixobrychus sinensis moorei* (p. 173) Middle Caroline Islands; *Globicera oceanica townsendi* (p. 191), Ponapé, Eastern Carolines, *Sauropatis sacra rabulata* (p. 197), Eua, Tonga Islands; *S. c. celada* (p. 198) Vavau, Tonga Group; *Myiagra townsendi* (p. 205), Kambara, Fijis; *Conopodera atypa* (p. 206), Fakarava; *C. a. rava* (p. 208), Whitsunday Isl.; *C. a.*

¹ Outdoor Bird Study. Hints for Beginners. By Edward Howe Forbush. Department Circular No. 12, Mass. Dept. Agr. pp. 1-51, numerous cuts. May, 1919.

Bird Houses and Nesting Boxes. By Edward Howe Forbush. Circular No. 10, Mass. Dept. Agr. pp. 1-28, 7 plates and numerous cuts. April, 1919.

² Reports on the Scientific Results of the Expedition to the Tropical Pacific in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., commanding. XXI. The Birds. By Charles Haskins Townsend and Alexander Wetmore. Bull. Museum Comp. Zool., Vol. LXIII, No. 4. August, 1919. pp. 151-225.

crypta (p. 209), Makemo; *C. a. agassizi* (p. 210), Apataki; *C. a. nesiarcha* (p. 210), Rangiroa; *C. a. erema* (p. 211), Makatea — all in the Paumotu Group; *C. percernis* (p. 213), Nukuhiva, Marquesas Isls.; *Pinarolestes nesiotes* (p. 216), Kambara, Fijis; and *Myzomela rubrata dichromata* (p. 220), Ponape Isl., Eastern Carolines. There were also three new forms of *Collocalia* in the collection which were described by H. C. Oberholser in 1906. On page 201, Mr. Wetmore proposes a new generic name *Haplornis* in place of *Muscylva* Lesson. He gives an exhaustive history of the latter genus and its applications, and in order to eliminate it and avoid the complications which its use would involve he designates as its type *Muscicapa carulea* Gmel., thus fixing it in the synonymy of *Hypothymis* Boie. This is very commendable but he fails to designate any type for his new genus and being admittedly a substitute for *Muscylva* it may be argued that it falls with it. In the hope that it may be saved from such a fate we would designate *Rhipidura lessoni* Gray as its type which seems to have been Mr. Wetmore's intention.

Incidentally the author shows that Mathews' proposed genus *Scoophaethon* is not deserving of recognition and that the correct name for the Red-faced Booby is as generally recognized *Sula piscator*, not *S. sula* as claimed by Mathews. (See however p. 189 of this 'Auk'.)

This paper is a valuable contribution to Polynesian ornithology and in the constant recurrence of specific names accredited to Titian Peale we are forcibly reminded of the historic United States Exploring expedition which touched on many of these same islands in 1838-1842. — W. S.

Coker on the Guano Birds of Peru.¹—The study of bird communities constitutes one of the most fascinating branches of ornithology and as the community that Mr. Coker describes in the present paper is one of the largest known in the world a peculiar interest attaches to his account. Engaged by the Peruvian government to make an economic study of the guano and fishery industries he spent the period from December, 1906 to August, 1908, on the coastal islands enjoying unrivalled opportunities for the study of the life histories of the various species of birds which breed there, and the present report embodies the results of his observations.

These Peruvian islands have long been noted for the remarkable deposits of guano left there by the nesting birds and its exportation for agricultural purposes has been going on for centuries. Some idea of the extent of the industry may be gathered when we learn that from 1851 to 1872 no less than ten million tons of high grade guano were extracted from the Chincha Islands alone, valued at the time at about three-quarters of a billion dollars. At the present time the high grade deposits have been well nigh exhausted and inferior deposits are being exported. This, how-

¹ Habits and Economic Relations of the Guano Birds of Peru. By Robert E. Coker. In charge Scientific Inquiry, United States Bureau of Fisheries. Proc. U. S. Nat. Mus. Vol. 56, pp. 449-511, plates 53-69. 1919.

ever, refers only to the accumulation of former years while the annual production of the birds today amounts to no less than 20,000 tons. The conservation of such an asset is naturally a problem of the utmost importance to the government. Indeed this seems to have been recognized from the earliest times for older authors quoted by Mr. Coker tell us that the Inca kings forbade landing on the islands during the nesting season, under pain of death, and the killing of the birds on or off the islands at this time was prohibited. Those who object to the stringency of modern bird and game laws may well take note of this!

Mr. Coker points out the interesting fact that the value of the guano depends largely upon the nature of the islands selected by the birds as nesting grounds. Those like the Chinchas are absolutely without rainfall, no vegetation is possible and the nitrogen cannot be converted into ammonia and lost by evaporation as would be the case were it subjected to rainfall, but is perfectly preserved in a form readily available for agricultural purposes. Some of the more northern islands where rain occasionally falls produce only inferior grades of guano.

The most important of the guano birds is the White-breasted Cormorant or "Guanay" (*Phalacrocorax bougainvillei*) and in June 1907, Mr. Coker found their colony on the Chincha Islands covering an area of fifteen acres, while a careful estimate showed that there were some 180,000 nests, and three-quarters of a million birds including old and young. In the following year the colony on these islands was half as large again due in part to accessions from another island. The Pelican or "Alcatraz," (*Pelecanus thagus*), comes second in importance and the Booby, "Piquero," (*Sula variegata*) third. Von Tschudi placed the Booby first as a guano producer, and his statement has been generally followed ever since, but after careful investigation Mr. Coker can find no evidence of conditions having been materially different in Tschudi's time from those prevailing today, and there is no question about the relative rank of the species at the present time. Other birds inhabiting the islands are the Penguin, (*Spheniscus humboldti*), several Gulls and Terns, an Albatross (*Diomedea irrorata*), several Petrels and Shorebirds, an additional species of Booby and two of Cormorants and a Man-o'-war bird. The Condor, two Turkey Vultures and a Passerine bird, the "Chirote," (*Cinclodes taczanowskii*) complete the list.

To the life histories of all of these Mr. Coker makes valuable contributions while the economic aspect of the guano industry is exhaustively treated. Twenty-five half-tone reproductions of photographs give one an excellent idea of these remarkable barren islands and the masses of birds which literally cover their surface during the nesting season. Mr. Coker is to be congratulated upon doing an excellent piece of economic work and making at the same time a most important contribution to ornithological literature.—W. S.

Scoville's 'The Out-of-Doors Club.'¹— To readers of 'The Atlantic Monthly' Mr. Scoville is well known as one who is making the environs of Philadelphia as famous a region for the nature lover as those of Boston and Cambridge have long been, thanks to the larger numbers of writers on outdoor life who seem always to have lived there. The present little volume describes many trips afield in which the writer instructs his children in the wonders of the great out doors. It is impossible to imagine a child,— or a grown-up for that matter,— who will not be attracted by the experiences of the "Band." Birds, mammals, reptiles, plants and camp-lore all come in for their share of attention and the wanderings lead across the Delaware to the author's cabin in the New Jersey pines and even to the remote "plains" in the central part of that State where the famous dwarf forests of pine and oak cover many acres, a region which has probably never before been described in popular writings.

The suggestion that the unidentified peepings that one of the children heard here might have come from a brood of young Heath Hens is hardly to be taken seriously. It is an attractive way, perhaps, to introduce the fact that the birds did once occur here but the region has been too carefully explored by hunters and ornithologists to make such an occurrence at all likely, and if the author really considered it probable the fact is deserving of more serious record elsewhere. The more likely possibility of young Ruffed Grouse is not mentioned! In referring to the peculiar Conrad's Crowberry which finds on the "plains" its southernmost limit we notice that the name of this early botanist is misspelled.

Little books like Mr. Scoville's add greatly to the interest in outdoor life and vastly increase the army of nature lovers who in turn become staunch protectors of the birds and wild flowers and out of whose ranks eventually come a smaller number of real ornithologists and botanists. He who, by his writings, starts such a process of evolution is deserving of all praise. Several of Mr. Scoville's fellow members of the Delaware Valley Ornithological Club have contributed photographs which add to the attractiveness of his little volume.— W. S.

Gifford's 'Field Notes on the Land Birds of the Galapagos Islands.'²— In 1913, Mr. Gifford, one of the naturalists on the California Academy's Galapagos expedition, published an account of the water-birds and the doves obtained by the party. Having been subsequently occupied with anthropological work he has been unable to complete his report and now presents his ornithological field notes in order that they

¹ The Out-of-Doors Club. By Samuel Scoville, Jr. Philadelphia, 1919. The Sunday School Times Company. 12 mo. pp. 1-171.

² Expedition of the California Academy of Sciences to the Galapagos Islands, 1905-1906. XIII. Field Notes on the Land Birds of the Galapagos Islands and of Cocos Island, Costa Rica. Proc. Calif. Acad. Sciences. Fourth series. Vol. II, Pt. II, No. 13, pp. 189-258. pp. 189-258. June 16, 1919.

may be available to students of the Galapagos avifauna, leaving the critical study of the 5,916 specimens of land birds and the collection of nests, eggs and stomach contents for future investigation.

While it is regrettable that the entire collection could not have been worked up promptly by Mr. Gifford, who of course knows more about it than anyone else, we are nevertheless grateful for the large amount of interesting information relating to the life histories of the birds of these famous islands, which he has made available to the student.

Of the thirty-six species referred to in the paper all but three are resident forms. The Barn Swallow, was found at Cocos Island on September 2 and 5 and at Charles Island on October 11 and 12, and a Bobolink came on board the vessel in lat. $7^{\circ} 23' N.$ long., $97^{\circ} 48' W.$ on September 28 and again in lat. $14^{\circ} 24' N.$ long., $106^{\circ} 42' W.$ on October 3, these locations were between 300 and 500 miles off the Central American coast. A Redstart also came on board near the last mentioned station. These records will prove of interest to students of migration.—W. S.

Hall and Grinnell on Life-Zone Indicators in California.¹—This important and timely paper should be read by all students of geographical distribution. As the authors point out it is only the naturalist of wide experience and with a knowledge of both zoölogy and botany who can accurately judge of the zonal affinities of a given region, and as the attempt is too frequently made by those who are not so qualified, grievous errors are made and authors often, from lack of knowledge of the situation which confronts them, fall back upon the unfortunate and reprehensible practice of coining special terms of their own to fit the apparently anomalous conditions which they find. The present authors have presented a list of plants and vertebrate animals which are characteristic of the several life zones that occur in California, as a guide for those who are studying zonal distribution of life in that State. They also offer a list of influences which tend to interfere with the orderly succession of life zones as they would occur if dependent wholly upon temperature and altitude. Foremost among these is of course, slope exposure, followed by air currents, cold water streams, evaporation from moist soil, proximity to large bodies of water, influence of lingering snow banks, changes in vegetable covering, extent of mountain area, and rock surfaces. Many of these affect plant life only, though a knowledge of them may also explain many local anomalies in the distribution of animals.

The trouble heretofore seems to have been that botanists rely too much upon soil composition and character to account for distribution, while zoölogists — some at least — have ignored everything but temperature and altitude. The happy combination of a botanist and zoölogist in the

¹ Life-Zone Indicators in California. By Harvey Monroe Hall and Joseph Grinnell. Proc. Calif. Acad. Sciences. Fourth Series. Vol. IX, No. 2, pp. 37-67. June 16, 1919.

authorship of the present paper has apparently resulted in a more equable treatment of the problem than has yet been presented.

The important facts are brought forcibly to our attention that we must not look for all or even a majority of "indicators" in any one locality since other conditions limit the range of most species *within* their zone. Moreover, a thoroughly typical species may occur outside of its zone as a straggler without lessening its value as an "indicator" of the zone—in other words the abundance of the species must be taken into consideration as well as its mere presence.

We trust that ere long we may have an authoritative list of zone "indicators" for other regions besides the Pacific coast.—W. S.

Dabbene on Argentine forms of the Genera *Geositta* and *Cinclodes*.¹—In this important systematic paper, Dr. Dabbene has carefully reviewed the Argentine species and subspecies of these two genera, giving full descriptions of the plumage of each, an apparently complete synonymy, tables of measurements of specimens examined, and keys for identification. There are also half-tone plates illustrating the habitats of some of these birds in the mountain regions of north-western Argentina and maps showing their geographic distribution.

By the careful work of Dr. Dabbene and his associates we are obtaining a thorough knowledge of the Argentine avifauna such as can only be supplied by capable resident ornithologists. We congratulate them upon the admirable results of their studies and hope that their researches may continue without interruption.—W. S.

Cory's 'Review of the Genera *Siptornis* and *Cranioleuca*.'²—After examining all of the species of the old genus *Siptornis* that were available Mr. Cory has presented a key to the genera into which he would divide the group and another key to the species and subspecies. As an aid to the identification of these difficult birds it will be of much assistance but from the tentative position to which he refers a number of species that he was unable to examine, it is evident that there is still much to be learned about the group.

According to the author's views the old name *Siptornis* must be restricted to the type species, and most of the others referred to *Cranioleuca* Reichb. *S. ottonis* however, he makes the type of a new genus *Pseudosiptornis* (p. 150), while *S. flammulata* becomes the type of another new genus *Siptornoides* (p. 150) which includes ten other species. Some of these however, are separated again under the subgeneric name *Eusiptornoides* (p. 150) type *S. anthoides*.

¹ Las Especies y Subespecies Argentinas de los Generos *Geositta* Swainson y *Cinclodes* Gray. Por Roberto Dabbene. Ann. del Mus. Nac. de Hist. Nat. de Buenos Aires. Tom. XXX, pp. 113-196. July 11, 1919.

² A Review of Reichenbach's Genera *Siptornis* and *Cranioleuca*, with Descriptions of New Allied Genera and a Subgenus. By Charles B. Cory. Proc. Biol. Soc. Washington, Vol. 32, pp. 149-160. September 30, 1919.

While in no way reflecting upon the accuracy of Mr. Cory's work we should have preferred rating all of these, no doubt perfectly natural divisions, as subgenera.

Our contention is that with the present rapid increase of generic names our nomenclature is being rendered more and more unintelligible. While the separation of any group into subdivisions indicating its phylogenetic development is most praiseworthy, why inject this into the *names* of the species involved, when it can be indicated just as well by the use of subgenera, leaving the nomenclature undisturbed? Here we have fifty-seven species or subspecies which most ornithologists with some knowledge of neotropical birds would recognize under the name *Siptornis*, but fifty-six of them now appear under names that are unknown to the vast majority and unless some vernacular name or synonym is appended we should have trouble in finding out what an author, who used them, was writing about. Mr. Cory has adopted a praiseworthy plan of trying to preserve the name *Siptornis* in the new names which he has coined but this is not often attempted and too often names of similar etymology apply to entirely unrelated groups.

This comment as has already been said is not directed against Mr. Cory but against a general practice the merits of which should be very carefully considered by present day systematic ornithologists.—W. S.

Chapman on New South American Birds.¹—Students of the neotropical avifauna will be pleased to learn, from the appearance of this paper, that Dr. Chapman has completed his service in the American Red Cross and is back again at his studies of the rich South American material obtained by various expeditions sent out by the American Museum of Natural History, in the years preceding America's entry into the great war. The fifteen forms here described as new are as follows: *Microsittace ferrugineus minor* (p. 323), Corral, Chile; *Upucerthia dumetoria hallinani* (p. 324), Tofo, Chile; *U. dabbeni* (p. 325) Tafi del Valle, Argentina; *Cinclodes fuscus tucumanus* (p. 326), same locality; *Leptasthenura punctigula* (p. 327), Sarmiento, Argentina; *L. andicola peruviana* (p. 327), La Raya, Peru; *Siptornis urubambensis* (p. 328) Machu Picchu, Peru; *S. punensis rufala* (p. 328), Tafi del Valle, Argentina; *Pseudochloris uropygialis connectens* (p. 329), La Raya, Peru; *P. olivascens sordida* (p. 330), Ticara, Argentina; *Atlapetes canigenis* (p. 330), Torontoy, Peru; *Diglossa mystacalis albilinea* (p. 331) Machu Picchu, Peru; *Oreomanes binghami* (p. 331), same locality; *Tangara cyaneicollis gularis* (p. 332) Candamo, S. E. Peru; *Amblycercus holosericeus australis* (p. 333), Incachaca, Bolivia.

They are described with the author's characteristic care and detail with frequent comparison with related forms.—W. S.

¹ Descriptions of Proposed New Birds from Peru, Bolivia, Argentina, and Chile. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist., Vol. XLI, Art. V, pp. 323-333. September 1, 1919.

Oberholser on *Larus hyperboreus barrovianus*.¹— In this paper, Dr. Oberholser again comes to the support of the Pt. Barrow Gull, a form originally separated from the Glaucous Gull by Mr. Ridgway in 1886 as a full species and so recognized in the second edition of the A. O. U. 'Check-List.' In 1906 after a study of a large series of these birds Dr. J. Dwight came to the conclusion that the alleged differences were not sufficiently marked to warrant recognition of *Larus barrovianus* and reduced the name to a synonym of *L. glaucus* [= *hyperboreus*] a view that was endorsed by the A. O. U. Committee and it was omitted from the third edition of the 'Check-List.' In 1918, Dr. Oberholser in an elaborate paper published in 'The Auk' proposed to resurrect it as a subspecies, a view which Mr. Ridgway, the original describer of the form had failed to take in his 'Birds of North and Middle America' the eighth volume of which, containing the Gulls appeared the next year. Dr. Dwight promptly met Dr. Oberholser's attempt at resurrection with an additional attack on the validity of the form and Dr. Oberholser now reappears in defence. All of this only demonstrates that with the same material available two or more authorities will have opposite opinions upon the recognition of subspecies based upon such finely drawn distinctions as are now so prevalent in systematic work. There is no "right" or "wrong" in such questions, it is simply a matter of personal opinion. The only fair way of treating such cases in our Check-Lists, it would seem, would be to state both views. Any other method obscures the facts in the case.— Dr. Oberholser's final argument, that a number of ornithologists to whom he had pointed out the characters of *L. barrovianus* agreed with him, reminds one of the *auctorum plurimorum* principal once so popular in discussing problems of nomenclature! — W. S.

Contributions to the Zoogeography of the Palæarctic Region.²— This issue is the first part of a new publication and contains two papers by Erwin Stressemann on the forms of the group *Ægithalos caudatus* and their hybrids, of which *Æ. c. romanus* (p. 10) from Rome is described as new; and on the European Bullfinches with a chart of their evolution.

Of the former group he recognizes fourteen pure-blooded forms, which he divides into three groups, and five hybrids. There is much discussion upon the nature of these forms.

Of the Bullfinches there are five races and one hybrid. Just where the recognition of so many natural hybrids in addition to subspecies is going to lead us it is hard to say.

In America there seems to be but little necessity for such a hypothesis

¹The Status of *Larus hyperboreus barrovianus* Ridgway. By Harry C. Oberholser. Proc. Biol. Soc. Washington. Vol. 32, pp. 173-176. September 30, 1919.

²Beiträge zur Zoogeographie der palaarktischen Region. Herausgegeben von der Ornithologischen Gesellschaft in Bayern. Heft 1, September 15, 1919. München 1919 Gustav Fischer in Jena. Preis Mk. 5.

and it has only been advanced in the case of the Flickers, Meadowlarks and a few other rather anomalous cases.— W. S.

Annual Report of the Chief of the Biological Survey.¹— Mr. E. W. Nelson's report as chief of the U. S. Biological Survey for the year ending June 1919, contains much of interest. The amount of appropriations available for the work of the Bureau was greater than ever before, including \$592,000 from the Federal Government and over \$800,000 appropriated by State Governments and other bodies for work in cooperation with the Survey. It is estimated that the destruction of noxious animals resulted in a saving of live stock valued at five millions and of forage and crops valued at fourteen millions.

The bulk of the report deals with the destruction of noxious mammals. The ornithological work consisted largely of investigating charges against various species of birds. Among these was the destruction of fish by Mergansers and Pelicans, the case of the former being held open while the latter was proven harmless to species used as human food. The Night Herons in Louisiana were charged with being injurious to the frog industry but this was disproved as was the charge against the White-winged Dove of destroying grain in Arizona. In the case of the Bobolink, while charges of damage to crops in the lower Delaware Valley were found to be groundless, there was found to be great damage to the rice crop in the southern states and an open season for shooting these birds was granted from Pennsylvania and New Jersey southward.

Much additional information of this nature is contained in the report which seems to show that several species regarded as beneficial when the effort toward bird protection was initiated must now be regarded as injurious at certain times and places and necessary steps taken for their control.

It is welcome news to learn that in addition to various publications of the Survey noticed in these columns during the past year, we may look at an early date for the appearance of reports on the birds of New Mexico and Alabama.

The supervision of the National Bird Reservations during 1918-1919 has been in charge of Dr. G. W. Field while Mr. G. A. Lawyer has conducted the administration of the migratory bird treaty.— W. S.

Shufeldt on the Birds of Brazil.²— In the August number of the 'Bulletin of the Pan American Union,' Dr. Shufeldt has compiled a popular account of the birds of Brazil illustrated by a number of photographs, mainly from specimens in the U. S. National Museum. The paper is arranged systematically beginning with the Rhea and reaching the Parrots on the ninth page, all the rest of the avifauna being disposed of in a couple

¹ Report of Chief of Bureau of Biological Survey. pp. 1-24.

² Birds of Brazil. By R. W. Shufeldt, M. D. Bull. Pan-American Union, August, 1919, pp. 159-176.

of paragraphs. While the treatment is thus rather uneven a great variety of matter is presented in connection with the species that are considered in detail, covering general history, fossil birds and habits of specimens in the Washington "Zoo."—W. S.

The Food of Australian Birds.¹—Dr. J. B. Cleland presents a summary of investigations relating to the food of Australian Birds done by himself and Messrs. J. H. Maiden, W. W. Froggatt, E. W. Ferguson and C. T. Musson. The data is presented under the following headings: Broad Summary of Results, Detail Summaries and Verdicts on Individual Species, Food of Birds from the Botanical Aspect, List of Birds Feeding on Particular Foods, and Tabulated Results of Examination of the Contents of Stomachs and Crops Examined. In the summaries one finds nothing conveying an idea of the volume of food items, in the absence of which it is difficult to conclude just what are the important foods. Now that Professor W. E. Collinge of St. Andrew's University has adopted and championed the volumetric system of food analysis, it is to be hoped his colleagues in the British Dominions also will realize its advantages. In the discussion in the booklet reviewed the majority of the species are commended. The principal exceptions are: the Crow, Starling, and House Sparrows which for best results should be kept under strict control, the Silver-eyes, which must often be suppressed for the welfare of cultivated fruit, certain Parrots which destroy grain and the bee-eaters. Pigeons, Doves, Quails, most Waterbirds and the Honey-eaters are mentioned as having no marked economic significance.

Points of interest may be noted in connection with the lists of birds feeding on particular foods. The longest list, 73 species, is of birds feeding on ants, a group of insects that a certain school of biologists defines as "specially protected," the models for "mimicking" insects in all orders. Small comforts here for either the "mimics" or the biologists. Caterpillars and other stages of Lepidoptera are cited with 68 bird enemies, flies with 59 and grasshoppers and their allies with 35. Thrips are recorded from the stomachs of four species, probably a better list of enemies of these minute insects than could be made with present knowledge for birds of the United States. However, all of the other lists of birds feeding on weed seeds and groups of destructive insects could easily be exceeded from American records.—W. L. M.

The Ornithological Journals.

Bird-Lore.² XXI, No. 5. September–October, 1919.

William Brewster. By Frank M. Chapman. A beautifully written and appreciative sketch of his life and works.

The Spotted Sandpiper. By C. W. Leister.—An account of its home life with admirable photographs.

¹ Science Bul. No. 15, Dept. Agr. New South Wales, July, 1918, 112 pp.

² D. Appleton & Company, Harrisburg, Pa.

The Birds of Coblenz. By Perley M. Jenness.

A Visit with Cedar Waxwings. By F. N. Whitman.—Several remarkably good photographs of young and old.

The Warbler in Stripes. By H. E. Tuttle.—Good account of the feigning of injury by the parent Black and White Warbler.

The educational leaflet treats of the Turkey Vulture and is by T. Gilbert Pearson with a colored plate by Horsfall.

Bird-Lore. XXI, No. 6. November–December, 1919.

Notes from a Traveler in the Tropics. By F. M. Chapman.—V. Chile.

How Birds Can Take Their Own Pictures. By Dr. E. Bade.—Showing admirable results of his method.

Our Family of Flickers. By Anna R. Roberts.

A Winter Feeding Place for Birds. By Verdi Burtch.—With photographs of Longspur, Snow Bunting, etc.

Migration of N. A. Birds covers Jays and Nutcracker with plate by Fuertes and the bulk of the number is taken up with the Annual Report of the National Association of Audubon Societies which as usual is full of interest.

The Condor.¹ XXI, No. 5. September–October, 1919.

Autobiographical Notes. By Henry Wetherbee Henshaw.—Continuation of this interesting historical sketch which runs through the next number also.

Differential Sex Migration of Mallards in New Mexico. By Aldo Leopold.—Evidence to show that the females migrate before the males.

Description of a Twenty Year Series of Eggs of the Sierra Junco. By Milton S. Ray.—An exhaustive study of an extensive series of the eggs of this species illustrated by photographs of sets to show variation, similarity in coloration of two sets from the same pair, etc.

A Return to the Dakota Lake Region. By Florence Merriam Bailey, (continued in the next number).

Bird Notes from Southeastern Oregon and Northeastern California. By George Willett.—An annotated list covering for the most part observations at Malheur Lake, Harney County, Oregon. 139 species are mentioned and there are several photographs of nests and young birds.

The Wilson Snipe Nesting in Southern California. By Edward Wall.

Description of a New Subspecies of *Pipilo fuscus*. By Harry C. Oberholser.—*Pipilo fuscus aripolius* (p. 210) from the middle portion of the Lower California Peninsula, type from San Pablo.

The Condor. XXI, No. 6. November–December, 1919.

Bird Notes from Saskatchewan. By H. H. Mitchell.

Notes on the Elegant Tern as a Bird of California. By Joseph Grinnell.—An uncommon and probably irregular fall visitant on the coast as far north as San Francisco Bay.

The Wilson Bulletin.² XXXI, No. 3. September, 1919.

Purple Martins at St. Marks, Florida. By John Williams.—Detailed

¹ W. Lee Chambers, Eagle Rock, Los Angeles Co., Calif.

² Geo. L. Fordyce, Youngstown, Ohio.

study of a colony giving dates of arrival, nesting, hatching of young, etc. for the past four years.

Twenty-four Hours in a Black Skimmer Colony. By B. R. Bales. — Another account of the Cobb's Island colony, [or a nearby one] already well described in Chapman's 'Camps and Cruises.'

Description of Another New Subspecies of *Lanius ludovicianus*. By Harry C. Oberholser. — *L. l. grinnelli* (p. 87), north central portion of the peninsula of Lower California, type from San Fernando.

Birds from a Sick Man's Window. By W. Elmer Ekblaw. — An interesting account of familiar species seen on the grounds of some University, the locality of which is not mentioned.

The Lure of the Godwit. By Gerald Alan Abbott. — Describes the habits of these interesting birds on the prairies of North Dakota and Minnesota.

The Wilson Bulletin. XXXI, No. 4. December, 1919.

Some Changes in the Summer Bird Life at Delavan, Wisconsin. By N. Hollister — A valuable comparison after a lapse of twenty years.

Birds of Wakulla County, Florida. By John Williams.

An Annotated List of the Land Birds of Sac County, Iowa. By J. A. Spurrell.

The Oölogist.¹ XXXVI, No. 9. September 1, 1919.

The Song of the Mockingbird. By Theodore R. Greer. — As heard in Aledo, Illinois.

The Oölogist. XXXVI, No. 10. October 1, 1919.

Nesting of the Black-billed Cuckoo. By G. W. Vosburgh. — At Columbus, Ohio.

The Oölogist. XXXVI, No. 11. November 1, 1919.

Ruffed Grouse [in Massachusetts]. By H. H. Johnson.

The Ibis.² XI, Series, I, No. 4. October, 1919.

On Birds from South Annam and Cochin China. Part II. Pycnonotidae — Dicæidæ. By Herbert C. Robinson and C. Boden Kloss. — 129 species are listed in this instalment of which the following are described as new, *Hemixus tickelli griseiventer* (p. 568); Langbian Peaks; *Xanthiscus flavescens sordidus* (p. 569), Arbore Broeye, S. Annam; *Garrulax milleti* (p. 574), Dalat, S. Annam; *Trochalopteron yersini* (p. 575), Langbian Peaks; *Stactocichla merulina annamensis* (p. 577), Dran, S. Annam; *Pomatorkhinus olivaceus annamensis* (p. 577) Dran; *P. tickelli brevirostris* (p. 578), Trang Bom, Cochin China; *Rimotor danjoui* (p. 578), Langbian Peaks; *Turdinulus epilepidotus clarus* (p. 582), Dalat; *Alcippe nipalensis annamensis* (p. 582), Dalat; *Pseudomina atriceps* (p. 583), Langbian Peaks; *Stachyris nigriceps dilutus* (p. 584), Dran; *Siva sordida orientalis* (p. 587), Langbian Peaks; *Herpornis xantholeuca sordida* (588), Daban; *Cutia nipalensis legalleni* (p. 588), Langbian Peaks; *Pterythrus aeralatus annamensis* (p. 589), Langbian Peaks; *Mesia argentauris cunhaci* (p. 591), Dalat; *Pnæpyga pusilla annamensis* (p. 591), Langbian Peaks; *Cissa margaritæ* (p. 604), Langbian Peaks; *Ægithaliscus annamensis* (p. 606), Dran; *Certhia dis-*

¹ R. Magoon Barnes, Lacon, Ill.

² Wm. Wesley and Son, 28 Essex St., Strand, London, W. C. 2.

color meridionalis (p. 609), Langbian Peaks; *Loxia curvirostra meridionalis* (p. 618), Dalat; *Æhopygga sanguinipectus johnsi* (p. 621), Dran; *Æ. gouldiæ annamensis* (p. 621), Langbian Peaks. Many of them are figured in beautiful colored plates.

Note on the Jays of Holland. By R. C. Snouckaert van Schauburg.

A List of the Birds of the Anglo-Egyptian Sudan, based on the Collections of Mr. A. I. Butler, Mr. A. Chapman and Capt. H. Lynes and Major Cuthbert Christy. Part III. Picidæ — Sagittariidæ. By W. L. Selater and C. Mackworth-Praed.

List of the Birds of the Canary Islands, with detailed references to the Migratory Species and the Accidental Visitors. Part IV. Anatidæ — Laridæ. By David A. Bannerman.

British Birds.¹ XIII, No. 4. September 1, 1919.

Observations on the Cuckoo. By Edgar Chance.— This is an extremely interesting account of an intensive study of the Cuckoos of a common in Worcestershire. Assuming that the eggs of each Cuckoo are always remarkably similar and are laid in the nests of the same species of bird in which the Cuckoo was reared, which seems to be pretty well proven, the author found that the Cuckoo under observation laid eighteen eggs in as many nests of the Meadow Pipit, on this common in the season of 1919. It seems that the Cuckoo removes one of the Pipit's eggs in case a full clutch is deposited before its visit to the nest. Mr. Chance is of opinion that the bird carries its egg to the nest of the foster parent in its bill but he has not yet been able to see the egg deposited although he spent a night on the common in the hope of solving this problem. The evidence presented seems to show that the Cuckoo locates every nest of the species upon which it is parasitic, that has been built in the district which it covers, and lays an egg about every two days until each nest is supplied; the number of eggs being thus dependent upon the number of nests.

British ornithologists have a most interesting problem before them in ascertaining the exact life history of this peculiar bird. Why do not some of our American bird students set about solving the same problem in the case of the Cow Bird? If the great army of egg collectors desire to demonstrate that there is really some science in their hobby here is their opportunity.

The "British Birds" Marking Scheme. By H. F. Witherby.— In spite of the war no less than 5,937 birds were ringed during 1918, bringing the grand total of ten years up to 87,584.

British Birds. XIII, No. 5. October 1, 1919.

Some Habits of the Sparrow Hawk. By J. H. Owen. (7) The effects of sunshine.— Excellent photographs.

Numerous notes on the habits of the Cuckoo.

British Birds. XIII, No. 6, November 1, 1919.

The Black-necked Grebe. By Oliver G. Pike. Account of a nesting at Tring with a wonderful series of photographs of the nest and bird under various circumstances.

¹ Witherby & Co., 326 High Holborn, London.

Some Points in the Sexual Habits of the Little Grebe, with a Note on the Occurrence of Vocal Duets in Birds. By J. S. Huxley.

Avicultural Magazine.¹ X, No. 11. September, 1919.

Further Notes on Birds in the War Area and Beyond. By Capt. B. Hamilton Scott.

Bird-Life in 1918. By Allen Silver.—An interesting summary of the birds observed in England during the year. [Continued.]

Avicultural Magazine. X, No. 12. October, 1919.

Eggs and Nestlings. By Graham Renshaw.—Importance of preserving such specimens in the aviary.

Avicultural Magazine. X, No. 13. November, 1919.

Regularity in Moulting. By E. M. Knobel.—Dates of shedding tail feathers by an Alexandrine Parrot, for a period of five years.

The Emu.² XIX, Part 2. October, 1919.

The Allied Buff-rumped Tit-Warbler (*Geobasileus hedleyi rosinæ*). By Capt. S. A. White.—With a colored plate of this recently discovered bird.

The Eastern Palæarctica and Australia. By Robert Hall.—An account of birds seen in northern Siberia.

A Trip to the National Park of Tasmania at Mount Field. By Clive E. Lord.—This park which is also a bird sanctuary has an area of 38,500 square miles. The paper is illustrated by several views and there is an annotated list of the birds observed.

Material for a study of the Megapodiidæ. By R. W. Shufeldt.—With a number of illustrations from photographs of eggs and skeletons.

The Rosella Parrot (*Platycercus eximius*): a Sketch. By A. J. Campbell.

Birds Observed about the Lighthouse, Puysegur Point, Invercargill, N. Z. By R. Stuart-Sutherland.

Interesting photograph by H. A. Purnell of a Mound Builder's nest with eggs *in situ*.

The South Australian Ornithologist.³ IV, Part 3. July, 1919.

Notes from the Lake Frome District. By J. Neil McGilp.

Regent Honey-eaters — A Visit to the Adelaide Plains. By J. W. Mellor.

Revue Française d'Ornithologie.⁴ XI, No. 123. July, 1919. [In French.]

An Inquiry on the Vision of Birds. By Dr. A. Rochon-Duvigneaud. [Continued in the next number].

The Common Bee-eater in Vendée. By E. Seguin-Jard.

Revue Française d'Ornithologie. XI, No. 124-125. August-September, 1919. [In French.]

How Does a Bird Recognize and Return to its Nest? By F. Cathelin.

Der Ornithologische Beobachter.⁵ XVI, Part 7. April, 1919.

The Great Curlew. By H. Fischer-Sigwart.—Tables of migration dates, nesting etc. in Switzerland. [In German.]

¹ Stephen Austin & Sons, 5 Fore St., Hertford, England.

² Witherby & Co., 326 High Holborn, London.

³ F. M. Angel, c/o W. D. Wells, Grenfell St., Adelaide, Australia.

⁴ A. Menegaux, 55 Rue de Buffon, Paris.

⁵ A. Hess, Spitalgasse 28, Bern, Switzerland.

Der Ornithologische Beobachter. XVI, Part II. August, 1919. [In German].

Daines Barrington. An Apparently Forgotten Student of Bird Song. By Hans Stadler.

The Migration of the Storks through Alsace and Lorraine. By Walther Bachmeister.

Der Ornithologische Beobachter. XVI, Part 12. September, 1919. [In German.]

Nauman's Thrush. By Alb. Hess.

On Our Knowledge of the Siberian Thrush. By H. Gengler.

Ornithologisches Jahrbuch.¹ XXX, Heft 1-6. January-December, 1918. [In German.]

Ornithology of Syrmia [Hungary]. By J. Gengler.

Ornithology of Kapnu in Pinsgau [Austria]. By E. P. Tratz.

Bird Life of Tullu near Vienna. By K. Obermayer.

The Life Histories of Our Grouse. By M. Merk-Buchberg — "*Tetrao urogallus*, *T. tetrix* and *T. bonasia*."

El Hornero.² I, No. 4. September, 1919. [In Spanish.]

The Lariformes of the Republic of Argentina. By R. Dabbene.

On the Stomach Contents of Some Birds. By C. A. Marelli.

Glaucidium nanum. A Rare Case of Mimicry. By J. Koslowsky. Its attitude at rest makes its markings protective against its usual background.

Notes on a Collection of Birds from the Island of Martin Garcia. By R. Dabbene.

The Fantastic Ornithology of the Conquistadors. By Anibal Cardoso.

Birds New to Paraguay. By A. Winkelreid Bertoni. Fifteen species mentioned.

Birds of the Comune of Nuevas. By R. Dabbene.

Brief Notes on the Nests and Eggs of Some Birds of the Cordillera de Mendoza. By C. S. Reed.

Notes on the Nests of the Ovenbirds. By M. Doello-Jurado.— With illustrations.

Ornithological Articles in Other Journals.³

NOTE.—The Editor would be very grateful to authors if they would send him copies of such of their papers as are published in Proceedings of Societies, or other journals not exclusively devoted to Ornithology, in order that they may be promptly noticed in these columns. Unless this is done many papers are sure to be overlooked and their notice very much delayed. He would also regard it as a favor if his attention were called to omissions of this sort, by the readers of 'The Auk.' Only by such coöperation can the review of literature be made reasonably complete.

¹ Anton Pustet, Salzburg, Austria.

² Pedro Serie, Secty S. O. P., Museo Nac. de Hist. Nat., Buenos Aires.

³ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Clarke, John M. The New Gaspé Bird Sanctuaries. (Natural History, XIX, No. 4-5, April-May, 1919.) — An excellent account of the bird rock and Bonaventure Gannet colonies and the recent action of the Canadian government for their better protection. Illustrated by beautiful photographs by Chapman, Taverner, Cramp, etc.

Bailey, Alfred M. Notes on Our Hawaiian Reservation. (*Ibid.*) A splendidly illustrated article.

Allen, James Lane. Alexander Wilson. (*Ibid.*) This is a reprint of a chapter from Mr. Allen's book 'The Kentucky Warbler.' It is written in a very attractive style that will hold the attention of the readers of the story, but unfortunately as is too often the case when a writer of fiction endeavors to incorporate history or biography into his work he is very careless of details and is likely to start misstatements which will be perpetuated by those who take his writing at face value. Wilson was not a school teacher when he visited Virginia but still a weaver; it was Lawson not Bartram who suggested that he try his hand at drawing, and several other statements of the author are pure assumptions. Furthermore Mr. Allen seems to have become rather confused in his geography if he thinks that upon landing at New Castle Delaware, Wilson could have disappeared in the "forests of New Jersey." The Delaware River, here over two miles wide would have to be crossed first. His account is so clearly based upon that of Ord, that it is a pity he did not follow it more closely in details.

There is also an interesting reproduction of an original drawing of Wilson's in the possession of the American Museum of Natural History depicting the head of an American Egret with an accompanying account of it by the editor of the journal. In this it is referred to as a White Crane, while Titian Peale is mentioned as a naturalist friend of Wilson, who as it happened died when Peale was but a lad of thirteen!

Oberholser, Harry C. An Unrecognized Subspecies of *Melanerpes erythrocephalus*. (The Canadian Field Naturalist, September, 1919.) — In this paper, Dr. Oberholser may be correct in his ornithology but his nomenclature is decidedly open to question. (See *antea* p. 145).

Saunders, W. E. Nesting of the Caspian Tern in the Georgian Bay. (*Ibid.*).

Taverner, P. A. An Important Distinction Between our Two Goldeneyes. (*Ibid.*). — Attention is called to the more vertical angle of the skull, in front, in the Barrow's Goldeneye and to the much more moderate dilation in the windpipe.

Griscom, Ludlow. War Impressions of French Bird Life. — An interesting account of the familiar species and a comparison with the birds of the United States.

Wintenberg, W. J. Archæology as an Aid to Zoölogy. (*Ibid.* No. 4, October, 1919.) — Includes a discussion of the past and present range of the Wild Turkey and Great Auk. As an illustration of the failure of many persons to grasp the present idea of a binomial group name and its several trinomial elements (cf. Taverner and Stone, 'Auk,' 1919, pp. 316-318) the

author of this paper states that *Meleagris gallopavo*, "the original Turkey of Linnaeus" is now divided into four varieties. These he enumerates but omits entirely the first described race of *M. gallopavo gallopavo*.

Munro, J. A. Bird Study from a Duck-Blind. (*Ibid.*)—We wish that some of our eastern gunners could find time to observe birds from their duck blinds and write them up as has been done here by Mr. Munro. Unfortunately the more that birds are shot for game the less we know of their life histories and habits.

Oberholser, H. C. Revision of the Subspecies of *Passerculus rostratus* Cassin. (The Ohio Journal of Science, XIX, No. 6, June, 1919.)—Three races are recognized: *P. r. rostratus*, *guttatus* and *halophilus*, *P. r. sanctorum* is regarded as identical with *guttatus*.

Oberholser, H. C. A Review of the Plover Genus *Ochthodromus* Reichenbach and its Nearest Allies. (Trans. Wisconsin Acad. Sci., Arts and Letters, XIX, Part I, 1918. Received November, 1919).

This paper like several of Dr. Oberholser's recent publications is a careful and detailed review of an arrangement recently proposed by some other author. In this case it is G. M. Mathews' treatment of the smaller Plovers that he has investigated and he comes to practically the same conclusions as that author reached in his 'Birds of Australia.' It is gratifying to find two investigators in agreement upon the systematic arrangement of a group but the number of genera that are to be recognized in nomenclature may be a matter of opinion, when, as many claim, subgenera serve the purpose of the taxonomist just as well, without upsetting our whole system of names.

Cahn, Alvin R. Notes on the Vertebrate Fauna of Houghton and Iron Counties, Michigan. (*Ibid.*)—This paper is to some extent a supplement to Blackwelder's 'Birds of Iron County, Michigan' and twenty-three new records for one or both counties are presented.

Hess, H. Marguerite. Bluebird. (Nature Study Review, XV, No. 5, May 1919.)—A good account of habits etc.

Allen, E. G. Adventures of Jimmy. (*Ibid.*)—Habits of a tame crow.

Shaver, Nelle E. A Nest Study of a Maryland Yellow-Throat. (Univ. of Iowa Studies. First Series No. 23, December, 1919.)—Record of a detailed study. Among other observations was the removal of an addled egg by one of the parent birds which took it in its bill. In a nest of a Meadowlark, however, an addled egg remained in the nest after the young had flown.

Oberholser, H. C. Mutanda Ornithologica, VII. (Proc. Biol. Soc. Washington XX XII, June 27, 1919, pp. 127-128.)—*Attila cinereus* (Gm.) becomes *A. rufus* Lafr.; *Knipolegus comatus* (Licht.) becomes *K. lophotes* Boie; *Euscarthmus gularis* (Temm.) becomes *E. rufilatus* (Hartl.) and *Mimus ludus* (Licht.) becomes *M. antelius* nom. nov. (p. 128) all on account of the old names being preoccupied. *Curæus aterrimus* (Kittl.) changes to *C. curæus* Molina, an earlier name.

Oberholser, H. C. *Spizella arborea* the proper name for the Tree Sparrow. (*Ibid.*, p. 139.)—Accepts the correctness of Mathews' statement

('Auk,' 1919, p. 114.) that *monticola* is not available as the name of the Tree Sparrow and accepts *Fringilla arborea* Wilson as the first name based clearly upon this bird, which therefore becomes *Spizella arborea*.

Oberholser, H. C. The Proper Name for *Limicola platyrhyncha* (Temminck.) (*Ibid.*, p. 140.)—Again concurs in a case explained by Mathews in 1912 and agrees with him that this bird should be called *L. falcinella* (Pontoppidan.)

Oberholser, H. C. The Taxonomic Position of the Genus Ramphalcyon. (*Ibid.*, p. 140.)—W. D. Miller's conclusions as to the relations of this genus are reviewed and endorsed and his suggestion that it may require to be established in a separate subfamily accepted to the extent of naming such a subfamily—Rhamphaleyoninae.

Oberholser, H. C. The Status of the Genus *Centronyx* Baird. (*Ibid.*, p. 141.)—This is a concurrence in the opinion of Ridgway that *Centronyx* should rank as a genus and not as a subgenus, with comment on the constancy of some of the characters.

Oberholser, H. C. The Generic Name of the Rook. (*Ibid.*, p. 141.)—The writer here agrees with Hartert and others as to the generic distinctness of the Rook from the allied species of *Corvus* with which it used to be associated and refers to the fact already published by Dr. C. W. Richmond that *Frugilegus* is the proper generic name for it to bear. We notice however, that Mr. Witherby and his associates, among them Dr. Hartert, still place the Rook in the genus *Corvus* in the latest technical work on British birds, the 'Practical Handbook,' so that the recognition of this genus appears to be by no means universal.

Todd, W. E. Clyde. Descriptions of Apparently New Colombian Birds. (*Ibid.*, pp. 113-118.)—Twenty-three forms described all but one of which were collected by M. A. Carriker.

Oberholser, H. C. The Status of the Subgenus *Sieberocitta* Coues. (*Ibid.*, pp. 135-138.)—Here Dr. Oberholser agrees with Mr. Swarth's recent action in recognizing this as a subgenus, the matter being discussed at length.

"Z." Taxonomy and Evolution. A Rejoinder. (The American Nat., LIII, May-June, 1919, pp. 282-288.)—An admirable endorsement of the importance and good character of taxonomic work against an attack by "X" presumably a college "biologist" in the same journal for July, 1914.

Welsh, F. R. The Passenger Pigeon (Science, April 25, 1919.)—This is a remarkable statement of a "business man" ridiculing the claim that the Passenger Pigeon has been exterminated and mentioning the fact that he saw an individual at his home in Devon, a few miles from Philadelphia in 1902, 1904 and 1905, and upon his return to the same place, 1907-1913, he saw the species four or five times, the last time while travelling along the road in his motor car. And yet members of the Delaware Valley Ornithological Club, trained ornithologists, have scoured this region for thirty years, during which time not a single Wild Pigeon has been seen. Those who are not ornithologists see Wild Pigeons every once in a while

but it is surprising that 'Science' publishes so many such "records" without comment.

Chubb, Charles. Descriptions of New Genera and a New Species of South American Birds. (Ann. and Mag. Nat. Hist. (7) II, No. 7, July, 1918.) — *Pseudoconopophaga* (p. 122), type *Conopophaga melanogaster* (Menetr.); *Mackenziana* (p. 123), type *Thamnophilus leachi* Such.; *Frederickiana* (p. 123), type *Thamnophilus viridis* Vieill.; *Poliolæma* (p. 124), type *Myrmotherula cinereiventris*; and *Dichropogon* (p. 124) type *Hypocnemis pacilonota*. *Picrotes* (p. 123) is proposed as a substitute for *Lochites* Cab. & Heine, and *Sakesphorus* (p. 123) for *Hypolophus*. The new subspecies is *Rhopias fulviventris salmoni* (p. 124) Remedios, Colombia.

Chubb, Charles. New Forms of South-American Birds. (*Ibid.*, (9) IV, No. 22, October, 1919) these are: *Perissotriccus ecaudatus miserabilis* (p. 301), Bonasika River, Brit. Guiana; *Atalotriccus griseiceps whitelyanus* (p. 301), Quenga, Brit. Guiana; *Elania flavogaster macconnelli* (p. 304), Supenaam River, Brit. Guiana; *Elania cristata whitelyi* (p. 304), Roraima, Brit. Guiana, and no less than six races of *Pipromorpha oleaginea* as follows: *wallacei* (p. 301) Para, Brazil; *hauzwelli* (p. 302), Pebas, Peru; *chapmani* (p. 302), Llanos of the Medina, Colombia; *tobagensis* (p. 302), Tobago; *macconnelli* (p. 303), Kamakabra River, Brit. Guiana; and *roraimæ* (p. 303), Roraima.

Burkitt, J. P. The Wren. (Irish Naturalist, July–August, 1919.) — A most interesting study presenting some important data on the subject of the multiple nests of these birds. The male according to the author builds the nest but takes no part in feeding the young while in the nest. During this period he is building other nests, in one or more of which the brood of fledglings was found to roost later on.

Burkitt, J. P. Relation of Song to the Nesting of Birds. (*Ibid.*) — Mateless males are found to sing long after those with mates cease singing.

Forbin, V. Diving Water Birds. (La Nature, No. 2357. May, 1919.) — Remarkable reproductions of photographs by Dr. Francis Ward of Cormorants diving and swimming under water. [In French.]

Brasil, L. Notes on the Ornithology of Oceania. (Bull. Mus. Nat. d'Hist. Nat. Paris, 1917, pp. 429–441. Received June 25, 1919.) — The discovery of the type of *Egretta brevipes* Verr. & DesMurs, shows that this bird is a subspecies of *Demiegretta greyi*. The following new forms are described: *Pterodroma rostrata Trouessarti* (p. 432), *Poliolimnas cinereus ingrami* (p. 437); *Porzana tabuensis caledonica* (p. 440). All the birds mentioned are from New Caledonia. [In French.]

Raspail, Xavier. Nesting of the Red-tailed Redstart and Time of Incubation of its Egg. (Bull. Soc. Zool. France, XLII. 1917. Received, June 25, 1919.) [In French.]

Petit, L. Arrival of the Swallows and Swifts in 1917. [In French.] Also their departure.

Kuroda, Nagamichi. A Collection of Birds from Tonkin (Annot. Zool. Japon., IX, Part III, July, 1917.) — An annotated list of 130 species. [In English.]

Kuroda, Nagamichi. Notes on Formosan Birds, with Description of a New Bullfinch. (*Ibid.*) — An annotated list of 120 species and description of *Pyrhula uchidai* (p. 295), Shiskaban, Ako District. [In English.]

Kuroda, Nagamichi. Notes on Corean and Manchurian Birds. (*Ibid.*, Part IV, July, 1918.) — An annotated list of 204 species and a list of all the species known from these two countries. [In English.]

Stuart-Baker, E. C. The Game Birds of India. (Jour. Bombay Nat. Hist. Soc. XXVI, No. 1, December, 1918.) Very full account of the species of the genera *Catreus* and *Lophura*. In the next number for May 1919, the genus *Lophophorus* is considered.

Ticehurst, C. B. The Mesopotamian Bulbul. (*Ibid.*) — *Pycnonotus leucotis mesopotamiae* (p. 279), Basra, Lower Mesopotamia, is described as new.

Whistler, H. Notes on Birds of the Ambala District, Punjab. (*Ibid.*) — Concluded from XXV, p. 681.

Donald, C. H. The Birds of Prey of the Punjab. (*Ibid.*)

Ticehurst, C. B. On Asiatic Starlings. (*Ibid.*, No. 2, May, 1919.)

Whistler, H. Some Birds of the Ludhiana District. (*Ibid.*)

Jones, A. S. Birds found in the Simla Hills 1908–1918. (*Ibid.*)

Gabriel, Joseph. On the Distruction of Mutton-birds and Penguins at Phillip Island. — By barbed wire fences and the introduction of foxes. (The Victorian Naturalist, XXXV, April 1919, pp. 178–180.)

Duerden, James E. Some Results of Ostrich Investigations. (South African Jour. of Sci., XV, No. 4, November–December, 1918.) — A most important contribution to the life history and development of the Ostrich; fully illustrated.

Finch-Davies, C. G. On Birds Collected and Observed in the District of Okanjannde and Outjo, S. W. African Protectorate. (South African Journal of Nat. Hist., I, No. 1, May, 1918.) — An annotated list of 147 species.

Swynnerton, C. F. M. Stray Notes on Birds. (*Ibid.*) — The habits and peculiarities of Nightjars. The occurrence of Pelicans in southern Rhodesia, 200 miles from the sea. The coloration of *Glaucidium perlatus* causing a resemblance to a *Syrnium*.

Godfrey, Robert. The Birds of the Buffalo Basin, Cape Province. (*Ibid.*)

Charbonnier, H. J. The Lustre of Some Feathers of Hummingbirds (Nature, 103, p. 324, June 26, 1919) suggests that reflected light from crown and gorget illuminates the tube of the flower at which the bird is feeding.

Guthrie, Donald. Some Bird Notes from South Uist. (Scottish Naturalist, September–October, 1919.)

Additional Publications Received.¹ — Bird Notes and News. Autumn Number, 1919. (Bird protection in England).

¹ Inasmuch as nearly all of the publications received are noticed in the issue of 'The Auk' immediately following their receipt it seems unnecessary to list them all at end of 'Recent Literature' so hereafter only such as have not been reviewed, either because of lack of ornithological matter in their contents or because of lateness of receipt will be listed here.

Bluebird, Nos. 10, 11 and 12, September–November, 1919. (Many popular articles on birds.)

Bulletin of the Charleston Museum, XV, Nos. 6 and 7, October and November, 1919.

California Fish and Game, 5, No. 4, October, 1919. (Interesting account of game conditions 35 years ago.)

Philippine Journal of Science, XIV, Nos. 2, 3, and 4, February. March and April, 1919. (Wild Duck sanctuaries and protection of winter birds.)

Records of the Australian Museum. XII, No. 11. October 2, 1919.

CORRESPONDENCE.

International Ornithological Congress.

TO THE FELLOWS AND MEMBERS OF THE AMERICAN ORNITHOLOGISTS' UNION:

The project of holding an international ornithological congress in America in the year 1921, has been suggested in 'The Ibis' and was informally discussed at the last meeting of the A. O. U. in New York City.

That such a plan would meet with the approval of all American ornithologists is a forgone conclusion. Furthermore it would seem self-evident that it would be impossible to successfully hold a meeting of the A. O. U. and an international gathering in the same year unless they were held in conjunction.

The usual sequence would bring the 1921 A. O. U. meeting to Philadelphia and in order to facilitate arrangements for an international congress in that year the under-signed ornithologists of Philadelphia and vicinity desire to state that they stand ready to take entire charge of the local arrangements for such a congress in conjunction with the A. O. U. meeting in 1921, if held at Philadelphia, and they herewith extend a cordial invitation to the A. O. U. and to the foreign ornithologists to hold the congress in this city. The authorities of the Academy of Natural Sciences have been consulted and have offered the use of the museum building and lecture hall for the purposes of the congress. Philadelphia with its close association with the work of Bartram, Wilson, Audubon, Cassin and many others of the early American ornithologists offers a particularly suitable place for holding this congress and experience has shown that some of the most successful meetings of the A. O. U. have been held here. While the plans for the congress must of course be arranged by a committee

of the A. O. U., it was thought that an invitation from Philadelphia, where the A. O. U. meeting of 1921 would naturally be held, might facilitate the arrangements.

Respectfully submitted:

Witmer Stone
William L. Baily
George Spencer Morris
Samuel N. Rhoads
Spencer Trotter
Robert T. Moore
C. E. Ehinger
J. Fletcher Street
Julian K. Potter
George H. Stuart 3rd.
Samuel C. Palmer
William E. Hughes
H. Severn Regar
Stewardson Brown
Henry W. Fowler
James A. G. Rehn
Arthur C. Emlen
Samuel Scoville, Jr.

J. Parker Norris
William E. Roberts
Conrad K. Roland
Francis L. Bacon
John D. Carter
Robert Riddle
S. Earl Riddle
Thomas H. Jackson
Edward Norris
Francis R. Cope, Jr.
William H. Trotter
Edwin B. Bartram
William B. Evans
Wm. J. Serrill
Samuel A. Tatnall
Anthony W. Robinson
Cornelius Weygandt
Robt. P. Sharples

Name of the Red-footed Booby.

EDITOR OF 'THE AUK':

In the 'Bull. Mus. Comp. Zool.,' Vol. lxiii, August, 1919, a paper by Messrs. Townsend and Wetmore appears dealing with 'Birds from the Tropical Pacific.' On p. 167, under the name *Sula piscator* (Linné) a discussion of the name to be used for the Red-footed Booby is given. There appear to be fundamental errors in the reasoning, and it is quite impossible to fix the name "*piscator*" to a species, because it is "believed" that the female described by Linné was that species. It is conceded that "there is little question that the male and female described above belong to separate species of which the female is the bird now known as *Sula piscator*." In reaching this conclusion the authors eliminate the discrepancy in the colour of the quills, but lay stress on the number of tail feathers, though a couple could have been lost in the latter case, just as easily as a mistake could have been made in the former.

They admit that only the type of *Sula abbotti* Ridgway from the Mascarene group was available, but gloss over the fact that Adhelius' description was based on birds collected by Osbeck very close to Christmas

Island, where a species determined as *Sula abbotti* occurs. This seems an important factor.

As there can be no difference of opinion as to the fact that *Sula piscator* (Linné) is an indeterminable mixture I maintain that it cannot be used by any ornithologist who desires accuracy. I have reconsidered the matter in every detail with Messrs. Iredale and Hartert who agree that the resumé given in my 'Birds of Australia' is correct and that *Sula piscator* Linné must be regarded as quite indeterminable.

Yours etc., GREGORY M. MATHEWS.

Foulis Court, Fair Oak, Hants, England.

Ornithological Pronunciation.

EDITOR OF 'THE AUK':

May I take a little space in *The Auk*, to call attention to a matter which is not in itself ornithological, but which it seems to me is of importance to ornithologists? While attending the recent meeting of the A. O. U. in New York I noticed that one word which is liable to be used frequently in ornithological discussions was almost invariably mispronounced. If this were a matter of mispronunciation by one or two individuals I should say nothing, for my own speech is often far from perfect, but it seems to be common to the ornithological profession. Not only humble associates, but members, fellows, some with most enviable reputations, were prone to talk of *adult* birds when they should have said *adult*. Only once did I hear the word pronounced correctly in the two days I attended the sessions, and then the speaker, not quite sure of himself said "the *adult* -er- *adult* birds."

I have searched the dictionaries for any authority for the "ornithological" pronunciation of this word but cannot find it. Perhaps the fact that I am a school-teacher, and continually correcting mispronunciations among the coming generation has made me particular, but I have said what I have, not with the desire to find fault with any individual, but to assist the ornithological profession in efforts to perfect its use of English.

ARETAS A. SAUNDERS.

143 East Ave., Norwalk, Conn.

NOTES AND NEWS.

At the outset of a new year 'The Auk' finds itself with an abundance of material on hand; a most gratifying condition from the standpoint of the Editor but not perhaps from that of the contributors, since the appearance of some of the papers will of necessity be delayed. Under the circumstances a word on the matter of precedence of papers may be in order. It has been the practice of 'The Auk' to keep an exact record of the date of acceptance of each paper and so far as practicable they are published in this order. As, however, 'The Auk' is a journal and not merely a work of reference, and as it appeals to a very wide range of readers, it is necessary to keep the matter in each issue as varied as possible. What might be called "readable" articles are therefore arranged in one series and technical papers and geographic lists in another and the aim of the Editor is to mingle the two judiciously in every issue. If one predominates it is evidence that material of the other kind is lacking. Moreover in accepting papers a wide range of qualifications is considered, for it seems that everything that pertains to ornithology should have a place on the pages of 'The Auk' if it is to be, what we hope it may become, the leading ornithological journal in the world. Therefore papers are accepted for their historic, literary, biographic and economic value as well as for their intrinsic scientific worth. We have heard suggestions to the effect that at the present rate of increase in the production of ornithological literature there would soon be room for another journal of general ornithology in America. But two such journals would of necessity duplicate one another to a great extent and the cost to the subscriber, who would desire to have all the literature, would be doubled. If we could but secure an endowment sufficient to enable us to double the size of 'The Auk'—and \$25,000 would do it—then we should be able to disseminate twice as much literature at the same price and to publish all the papers submitted to us promptly while the permanent maintenance of 'The Auk' would be assured. The advancement of ornithology would seem to be best attained by the widest distribution of ornithological literature at the least cost and the increase in size of an existing journal would accomplish this end better than a multiplication of journals.

With the new year 'The Auk' responding to numerous requests publishes the address of each author at the end of his article in order to facilitate correspondence.

The list of "Publications Received" will be omitted in future since almost all of the books and journals mentioned are reviewed in the same issue in which they are listed. Such as are not reviewed will still be listed as "Additional Publications Received."

To the many contributors and others who have so generously aided

him during 1919 and in previous years, the Editor of 'The Auk' extends his thanks, with the hope that their support may continue during 1920, a year which gives promise of being most notable in the field of ornithological research.— W. S.

DR. CHARLES CONRAD ABBOTT died at his home in Bristol, Pa., on July 28, 1919, age 76 years. He was widely known as a popular writer on nature, as an archaeologist, and in his earlier years as an ichthyologist, while throughout his life he was an ardent out door student of the habits of animals.

He was born on June 4, 1843, at Trenton, N. J., son of Timothy Abbott and Susan Conrad Abbott, while his maternal grandfather, from whom he apparently inherited his love for nature, was Solomon W. Conrad, sometime lecturer on botany and mineralogy in the University of Pennsylvania. From early youth he was deeply interested in natural history studies, and showing no interest in business he decided to study medicine, as being the profession most nearly akin to his hobbies. He graduated in 1865, but never engaged in practice and acquiring the old Abbott homestead, "Three Beeches," on the Delaware below Trenton, in 1874, he devoted practically his whole life to the study of nature on its broad acres and in the surrounding woods and marshes.

In 1884 appeared his first popular nature work entitled 'A Naturalist's Rambles about Home' followed two years later by 'Upland and Meadow' probably his best effort, which was pronounced by James Purves, an English writer, as the "most delightful book of its kind which America has given us" adding that it closely approached White's *Selborne*. He published a number of other works of the same kind, and also some novels which were not very successful. He made some valuable contributions to archaeology and was connected with the Peabody Museum at Cambridge and for a time with the Museum of the University of Pennsylvania. At the former institution his collection of some 20,000 specimens from the Delaware Valley is deposited. He was also a voluminous contributor to 'Popular Science Monthly' and other similar journals.

His most important ornithological contribution was the catalogue of New Jersey birds in Cooke's 'Geology of New Jersey,' published in 1868. This contained some remarkable errors of identification as did some of his other ornithological papers of about the same time, which naturally brought forth criticism. This was something that Dr. Abbott seemed unable to tolerate and he stubbornly maintained the correctness of his assertions in spite of overwhelming evidence to the contrary.

He was of a very peculiar temperament and caustic in his comments so that he made enemies or rather drove away many who would have been fast friends. To those who understood him he was a most interesting companion and none could ask for a more entertaining host than he, when at his beautiful home on the Delaware, he took his guests to his familiar haunts and told them the traditions and happenings associated with them.

It is a pity that his peculiarities and his unfortunate early ornithological experiences kept him from associating intimately with ornithologists, or taking part in the activities of scientific societies. His books contain some beautiful sketches of nature about the Delaware Valley and he was the only writer of his class who did for the Carolinian birds such as the Chat, Tufted Tit, Cardinal etc., what the New England writers have done for the more northern species. Dr. Abbott was married in 1874 and is survived by his widow and a son and daughter. The burning of his old home not very long before his death and the loss of many of his valued manuscripts etc., was a severe blow, and cast a gloom over the remaining years of his life.—W. S.

EDWARD EVERETT BREWSTER, an Associate of the A. O. U. since 1893, died at Shenectady, N. Y. on July 1, 1919. He was born March 24, 1856, at West Cornwall, Connecticut, graduated at the Westfield, Mass., High School in 1875, and from Sheffield Scientific School, Yale University, in 1878, with the degree of Ph.B. in chemistry. In January, 1881, he accepted a position with the Menominee Mining Company of Norway, Michigan, and February 19, 1883, was transferred to their Chapin mine at Iron Mountain, in the same State. In 1891, he became chemist of the Pewabic Company of Iron Mountain, which position he held until his death. In 1918 he removed to Iron River, Mich., to take the position of Supervising Chemist of the Osana Grading Association, which graded the ore from seven different mines, the ore shipped annually amounting to about a million and a quarter tons.

He married Elizabeth Tayler Edwards in 1888, and they had four children. For twenty-one years Mr. Brewster was one of the trustees of the Iron Mountain public schools, being president of the board for three years.

Always interested in natural history, he was an enthusiastic bird-lover and made considerable collections of skins and eggs, which have been generously presented to the Michigan Agricultural College by his heirs. Among the birds is the Yellow-headed Blackbird taken at Iron Mountain May 17, 1890, which constituted the first record of that species for the State. The egg collection comprises upward of two hundred sets, mainly local, and all prepared with the most painstaking care.

Mr. Brewster contributed many notes to Professor Cook's 'Birds of Michigan' (1893), and was especially helpful to the writer in preparing 'Michigan Bird Life' (1912). In spite of the exacting demands of his profession he kept ever in touch with the wild life about him and his infrequent letters invariably contained facts of his own observation which testified to a keen insight and unflagging interest.

He is buried at his birthplace, West Cornwall, Connecticut.—WALTER B. BARROWS.

BARRON BRAINERD, an Associate of the Union since 1917, died in Brookline, Mass., May 15, 1919, following an illness of two months. Mr.

Brainerd was born in Boston, March 3, 1893. He attended the public schools of Brookline until 1910 when he entered the Hallock School at Great Barrington, Mass., preparatory for Williams College, which he entered the following year and graduated with his class in 1915.

After graduating he taught for a year before taking up post-graduate work at Harvard University, where he spent two years specializing in economics and international law.

At the outbreak of the war he at once volunteered, but was rejected. Not discouraged, he submitted to an operation, and in August 1918 was accepted for enlistment in the Navy, but on account of the influenza epidemic raging at that time, he was not ordered to report for duty until after the first of October. He was promoted to the grade of Chief Boatswains' Mate U. S. N. R. F., and as such was attending the Candidates Material School at Cambridge when he developed the illness that resulted in his death.

His interest in birds dated back to the time that he was twelve years old, and continued unabated for the rest of his life. During his five years of attendance at school and college in Berkshire county he worked indefatigably during his spare moments and gathered much valuable data on the migration, distribution and abundance of birds in that section of Massachusetts. In January, 1916 he was elected to active membership in the Nuttall Ornithological Club, and served as its Secretary from December, 1917 to the time of his death. During this period he was among the foremost in the ranks of the active field workers in the region about Boston.

Mr. Brainerd possessed the rare faculty of doing well everything to which he set hand or mind. He was never satisfied to do anything except his very best in any of his numerous interests whether athletics, studies, or ornithology. His enthusiasm and good nature were contagious.

To those who were privileged to have known him, his loss is a very real one, leaving a place that can never be filled.— J. L. PETERS.

THE Biological Survey of the United States Department of Agriculture at Washington, D. C., desires during the coming year to greatly increase the number of its voluntary migration and bird count observers. The satisfactory carrying out of the provisions of the Migratory Bird Treaty Act involves careful study of bird migration and its attendant problems, and many additional data are desired. Any persons who are willing to assist by making reports on the migration of birds in their localities, will be very gladly furnished with the requisite blanks by the Biological Survey.

At the annual meeting of the Nuttall Ornithological Club held on December 1, 1919, Dr. Glover M. Allen was elected president to fill the vacancy caused by the death of Mr. William Brewster who had held the office ever since the Club was organized. The secretary, Mr. Campbell Bosson, declining reelection, this office was filled by the election of Mr. Warren F. Eaton.

THE president of the A. O. U. has appointed as a Committee on Classification and Nomenclature of North American Birds, Witmer Stone, Chairman, Charles W. Richmond, Jonathan Dwight, T. S. Palmer and Harry C. Oberholser. It was thought that the old committee had become too large for effective work as it was impossible to secure a quorum to attend a meeting, all the members of the new committee, however, were members of the old one. A meeting will be held in Washington soon after the first of the year when plans for a new edition of the A. O. U. 'Check-List' will be formulated and active work begun. It is planned to make this work the Nearctic volume of the proposed 'Systema Avium' to be gotten out jointly by the B. O. U. and the A. O. U. while the Neotropical volume will probably also be prepared by an A. O. U. Committee. Mr. W. L. Slater has been conferring with the members of the A. O. U. Committee on plans for a uniform system of classification and nomenclature and for establishing uniform limits for such genera as occur on both sides of the Atlantic.

THE collection of birds at the Victoria Memorial Museum at Ottawa, according to information obtained from the curator Mr. P. A. Taverner, now contains some 14,000 skins and mounted birds and 1,600 sets of eggs and nests. These are practically all Canadian specimens and with a very few gaps include all the species mentioned in the Macoun Catalogue.

The following localities are more or less fully represented: Cape Sable and King's Co., N. S.; Miscou Island, Gloucester Co., N. B.; Perce, Gaspé Co., and Bonne Esperance, Saguenay Co., Que.; Ottawa, Point Pelee, Go-Home Bay, Georgian Bay, and Kapuskasing, Ont.; Lac Seul, N. Ont.; Douglas and Shoal Lake, Man.; Indian Head, Sask.; Medicine Hat, Red Deer River, Edmonton, Banff, and Jasper Park, Alta.; Fernie, Elko, Trail, Midway, Penticton, Revelstoke, Kamloops, Chilliwack, Agassiz, Vancouver, Victoria, Departure Bay, Comox, Barkley Sound, Hazelton, Vanderhoof, and Telkwa, B. C.; Teslin Lake, Y. T.; Arctic Coast, east to Coronation Gulf, and Franklin, Victoria, Banks, Melville and Southampton Islands. Many of the specimens of the older geological survey expeditions have been lost but the magnificent Spreadborough collection is in good state of preservation. In 1911, the collection numbered but 3000 specimens.

A STUDY of the A. O. U. list of members shows some interesting facts. There are still on the roll nine of the founders; Allen, Batchelder, Bicknell, Brown, Cory, Fisher, Merriam, Ridgway and Shufeldt. Of those elected in 1883, are twelve Fellows: Barrows, Chadbourne, Deane, Dutcher, Dwight, Grinnell (G. B.), Loomis, Nehrling, Nelson, Roberts, Sage and Saunders, and two Retired Fellows: Henshaw, Lawrence (N. T.), while seven are Members: Evermann, Jeffries, Knowlton, Murdoch, Seton, Stephens, and Townsend (C. H.), and two Associates; Harry Merrill and H. K. Coale.

The 1884 series comprises only, Bangs, Widmann and Stejneger. In 1885 there were the following additions: Anthony, Bishop, Chapman and Stone

all now Fellows; Mrs. Bailey, Butler, Gault, S. N. Rhoads, and Rives, Members and, W. F. Hendrickson, A. M. Ingersoll, W. H. Fox, C. B. Riker, H. M. Sage and C. W. Chamberlain, Associates.

In 1886 there were elected: W. L. Baily and H. L. Clark, now Members, and J. M. Edson, G. F. Morecom, A. G. Paine, L. B. Woodruff, and J. Barnard.

These constitute the fifty-seven members of the A. O. U. of longest standing. There are several members on the list at present who were elected during the above period but who dropped out for a number of years and were later reelected.

THE results of the Canadian Arctic Expedition of 1913-1918 are being published rapidly by the Government at Ottawa. So far the only one relating at all to birds is that on the bird parasites (*Mallophaga*) of which twenty species were obtained. Dr. Anderson upon whom devolves the editing of the whole series, is hard at work upon his own reports on the Mammals and Birds and hopes to get them out during the coming year.

WE learn from the first number of 'The South African Journal of Natural History,' that the South African Ornithologists' Union and the Transvaal Biological Society, have amalgamated to form the South African Biological Society, by which body the journal is published. An historical account of the former of the parent societies states that it was organized on April 8, 1904, with Mr. W. L. Selater, then resident in South Africa, as the first president. Twenty-two numbers of the 'Journal of the South African Ornithologists' Union' and three numbers of the 'Bulletin' were published under the editorship, first of Mr. J. Bucknill and later of Mr. A. K. Haagner, to whose suggestion was originally due the organization of the Union.

The present combination seems to promise greater strength and more regular publication and we look forward to many valuable ornithological papers in the new 'Journal.'

THE Delaware Valley Ornithological Club tendered a dinner to Mr. William Lutley Selater at Philadelphia, on the evening of December 11, 1919, in which forty-five members participated. Mr. Selater gave an interesting account of a former visit to the city with his father in 1884. Dr. Spencer Trotter spoke of his early association with the Academy of Natural Sciences, and his meetings there with Mr. Henry Seebohm and Dr. Elliott Coues. Dr. Cornelius Weygandt spoke of the love of bird study as the common heritage of the English speaking people, and other addresses were made by Dr. Wm. E. Hughes and Mr. Samuel N. Rhoads, while Mr. W. L. Baily exhibited some excellent lantern slides of local bird life.

The occasion was of further interest as it marked the thirtieth anniversary of the founding of the Club.

THE publishers of Dr. Ernst Hartert's work 'Die Vögel der paläarktischen Fauna,' Messrs. R. Friedländer & Sohn, 11 Karlstrasse, Berlin

N. W. 6, announce that part X, beginning with the *Ibididae*, is now in press and will probably appear early in 1920. As the whole of the manuscript is finished, this monumental work will now be completed, and subsequent parts are expected to come out at reasonable intervals. The printing, however, is at present only possible with pecuniary sacrifice and the price of each part must be considerably increased. The extent of the work will be larger than originally estimated and will comprise three large volumes, including a supplement to volume I.

BELIEVING that a better knowledge of wild life will bring about better conservation of it, and that when people are on their summer vacations they are most responsive to education on wild life resources, the California Fish and Game Commission backed by the Nature Study League instituted this past summer a series of lectures and nature study field trips designed to stimulate interest in the proper conservation of natural resources. Six different resorts in the Tahoe region were selected for the work, and here illustrated lectures on the game birds, song birds, mammals, and fish, given by Dr. Harold C. Bryant of the University of California, furnished evening entertainment while early morning trips afield gave vacationists an introduction to mountain wild life.

Compact nature study libraries were placed at the resorts by the California Nature Study League and an exhibit of colored pictures and other illustrated material was on display. Thus vacationists were further able to increase their fund of information regarding wild life by a study of pictures, specimens and books.

This experiment in making conservationists out of vacationists proved so successful that another year will doubtless see the work expanded and the opportunity to study under a nature guide offered to thousands of vacationists in all parts of the State.

THE Museum of Vertebrate Zoölogy of the University of California has received from Miss Annie M. Alexander an endowment of \$200,000, the proceeds of which are to be used henceforth and exclusively for its maintenance. The work of the Museum was formally inaugurated on March 23, 1908, when Miss Alexander, upon her own initiative, entered into an agreement with the University by which she promised support for a period of seven years. Since that time she has continued her support in increasing measure, until, by her endowment, she has now insured the continuance of the Museum for all time.

The work of the Museum, through its able staff headed by Dr. Joseph Grinnell, in preserving specimens of the higher vertebrates of western North America, and in publishing the results of their studies of the fauna, is well known both here and abroad, and it will be a matter of congratulation for zoölogists everywhere to know that this admirable work is to continue without interruption. Miss Alexander deserves all praise for the conception of the Museum and the line of work it was to pursue as well as for her liberality in providing for its maintenance.

Continued from page 2 of cover.

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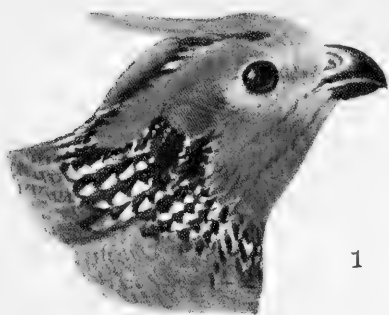
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A REVISION OF THE GENUS EUPSYCHORTYX.

BY W. E. CLYDE TODD.

Plates V-VI.

INTRODUCTION.

WHEN, some three years ago, the writer had occasion to take up for identification the gradually increasing series of South American Crested Quails in the collection of the Carnegie Museum, he experienced great difficulty in reaching definite conclusions. Discrepancies were evident between the specimens in hand and the published descriptions consulted, and it soon became apparent that the group was sadly in need of revision. Preliminary studies made at that time resulted in the publication of two forms believed to be new. More recently he has been led to take up the whole matter afresh in connection with a new faunal study of the birds of the Santa Marta region of Colombia. For various reasons it has seemed desirable to present the results of this particular investigation in a separate paper, and to go into the subject in more detail than would otherwise be permissible, the more so in view of the fact that the status of the newly described forms has recently been questioned, and that there still seems to be a great deal of uncertainty regarding the relationships and nomenclature of the older forms as well. Such a study has been made possible only through the courtesy of other institutions and individuals in the loan of material, and I have to thank the authorities of

The American Museum of Natural History, the U. S. National Museum, the Museum of Comparative Zoology, the Museum of the Brooklyn Institute, the Academy of Natural Sciences of Philadelphia, and Mr. James H. Fleming, of Toronto, Ontario, for favors extended. No less than one hundred and ninety-two specimens have been examined, including considerable typical and topotypical material, and a representation of all the known forms. My acknowledgments are also due to Mr. George M. Sutton for the very excellent painting which forms the basis of the plate which accompanies this paper, and for plotting both of the maps illustrating the distribution of the various forms. None of the references appearing in the paper have been taken at second-hand, and I have to thank Mr. E. W. Nelson, Dr. Harry C. Oberholser, and Dr. Charles W. Richmond for verifying a few of those here quoted. All measurements are in millimeters, and the length of the bill is that of the exposed culmen. Free use has been made of Mr. Ridgway's 'Color Standards and Color Nomenclature' in preparing descriptions.

Genus **Eupsychortyx** Gould.

Eupsychortyx GOULD, Mon. Odontophorinæ, 1850, 15 (diag.; list of species; no type designated).—GRAY, Cat. Genera and Subgenera Birds, 1855, 107 (*Tetrao cristatus* Linnæus designated as type).—GRAY, Hand-List Birds, II, 1870, 273 (list of species).—GIEBEL, Thes. Orn., II, 1875, 141 (diag.; list of species).—WATERHOUSE, Index Genera Avium, 1889, 78 (ref. orig. diag.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 99, 407 (diag.; *E. leucopogon* given as type).—SHARPE, Hand-List Birds, I, 1899, 45 (list of species).—DUBOIS, Syn. Avium, II, 1907, 819 (list of species).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 295 (diag.; references).—KNOWLTON, Birds of the World, 1909, 296 (range).—CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 173, in text (crit.).
Eupsichortyx (emendation) BONAPARTE, Compt. Rend., XLII, 1856, 883 (list of species).

The first species of this group to receive a binomial name was the *Tetrao cristatus* of Linnæus, 1766, based on Brisson. Curiously enough, the true habitat of this form remained unknown

up to 1892, when the late Count von Berlepsch received it from Curaçao, one of the Dutch West Indies, and it has since been traced to the mainland. The Guiana bird was at first supposed to be the same, but in 1815 Temminck distinguished it under the name *Perdix sonnini*, although as late as 1892 we find von Berlepsch arguing the question. In 1830 Vigors described two supposed new quails as *Ortyx affinis* and *Ortyx neoxenus*, but it is practically certain that these names refer to the same species already named by Temminck and Linnæus respectively. In 1842 Lesson described a bird from "San Carlos in Central America" as *Ortyx leucopogon*, and the following year Gould followed with the description of *Ortyx parvieristatus* and *Ortyx leucotis* from Colombia. Specimens were few and far between at this time, as Gould discovered when he undertook to bring together material for his work on the Odontophorinæ or American Partridges, which appeared in 1850. In this work Gould proposed to split up *Ortyx*, which had superseded *Perdix* as the generic designation of the American Quails, into several generic groups. He placed the five accepted forms above mentioned in his new genus *Eupsychortyx*, together with the *Ortyx affinis* of Vigors, which he considered doubtful.

In 1855, J. E. Gray designated *Tetrao cristatus* Linnæus as the type of *Eupsychortyx*. Later authors have, as a rule, accepted the genus without question, while Mr. Ogilvie-Grant, who was the next author to deal critically with the group, enlarged it to include two Central American forms that had heretofore been referred to *Ortyx*, namely, *O. leylandi* Moore and *O. nigrogularis* Gould, including here also *Eupsychortyx hypoleucus*, described by Gould in 1860. Salvin and Godman also adopted the same limits in the "Biologia Centrali-Americana." Very recently Dr. Chapman has sought to merge *Eupsychortyx* with *Colinus* (the equivalent of the old *Ortyx*), and there is certainly much to be said in favor of his views, so much, indeed, that the present writer finds himself in full accord with the principles there laid down. In practice, however, so long as we recognize so many other generic groups with no better characters, we are justified in provisionally recognizing *Eupsychortyx*, at least until such time as a consistent scheme for evaluating generic groups can be devised. But even with this

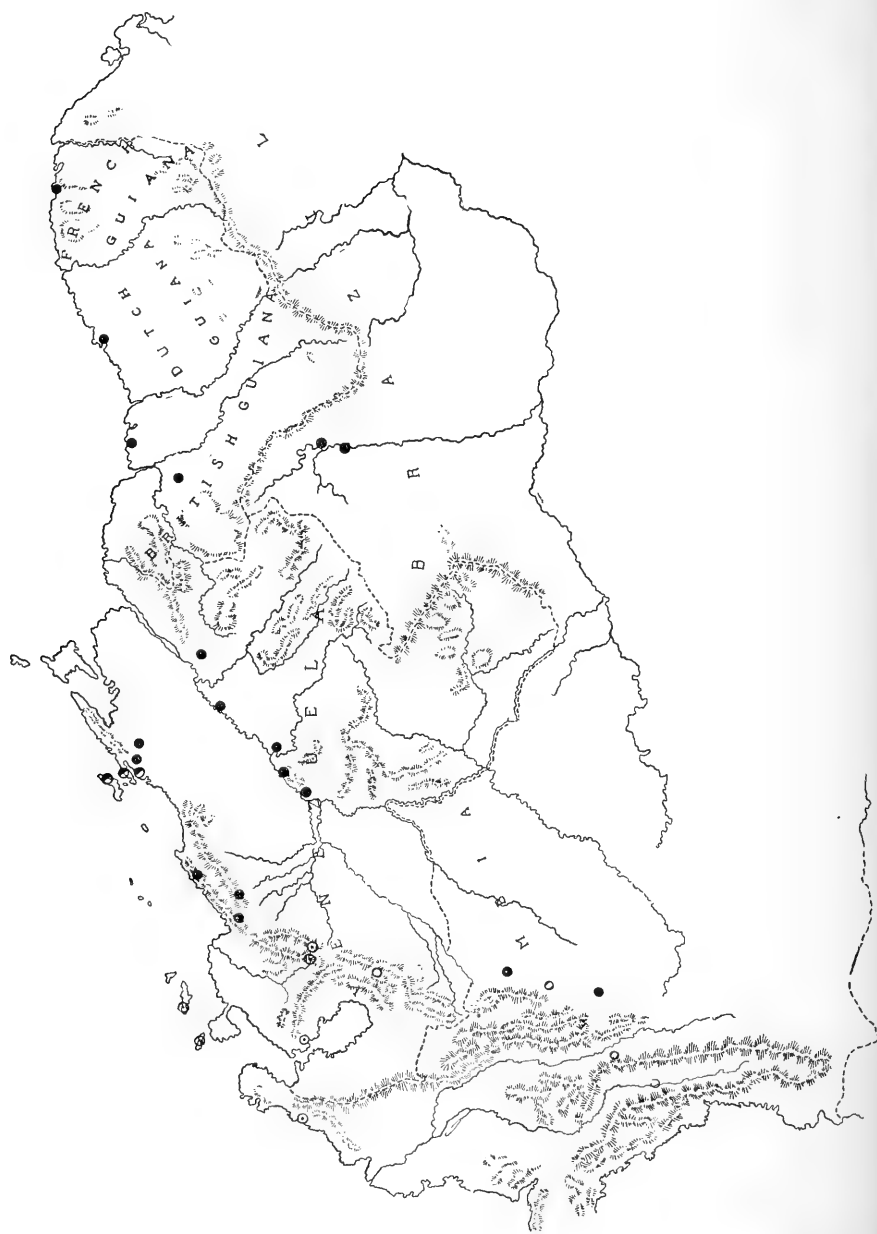


Fig. 1. Distribution of *Eupsychortyx* ● *E. s. sonnini*, ● *E. s. mocquerysi*, ○ *E. c. cristatus*, ○ *E. c. horvathi*.

understanding *Eupsychortyx* can only be recognized by restricting it to the forms occurring from Panama southward, in which the crest (when fully developed) is longer than the head and slightly recurved at the tip. The relative length of the first primary, upon which Mr. Ogilvie-Grant lays so much stress, unfortunately does not correspond with the character of the crest. As a matter of fact *Ortyx leylandi* Moore, *Ortyx nigrogularis* Gould, and *Eupsychortyx hypoleucus*¹ Gould agree much better with the type of *Colinus* (*C. virginianus*) than with *Eupsychortyx* as here restricted, all three having the short, decumbent crest of the former.

The close relationship existing among the various forms of this group is indicated by the general agreement in their style of coloration, and in particular by the close resemblance of the females, which are sometimes difficult to discriminate. Three specific types, depending for their characters on the color of the throat, and superciliary and malar stripes, and the spotted condition of the breast, can be discriminated. The distribution of these three types seems as a rule to be sharply defined by mountain ranges, which they appear unable to pass, being birds of the Tropical or Subtropical Zone. Thus, *E. sonnini* enjoys an extensive range in Guiana and Venezuela, but is abruptly stopped by the Andean chain in Venezuela and Colombia. In the region around the Lake of Maracaibo, in the pocket between the Andes of Meridá and the Eastern Andes of Colombia, we find the second type, *E. cristatus*. In the valleys of the Andean region, and extending into the low country as far even as western Panama, a third type, *E. leucopogon*, occurs. All three of these types are subject to more or less geographic variation, while individual variation is excessive. A most interesting problem is presented in the case of *E. leucopogon* and *E. cristatus*, the respective ranges of which appear to approximate each other very closely, possibly overlapping. The possibility that *E. cristatus* and *E. sonnini* may also meet and intergrade in some restricted area in Venezuela is likewise to be considered. The phylogeny of the group will be more fully discussed, we hope, by the eminent authority to whom we are looking for an exhaustive study of the genus *Colinus*.

¹The only doubt in this case is with regard to this form, of which I have been able to examine but one male specimen.

Suffice it to say here that I regard *E. sonnini* as the primitive form.

Between the views of the latest writer, who would reduce all the described forms of this group to subspecies of *E. cristatus*, and those of previous authors, who retain them as distinct species, there would seem to be room for a safe and sane arrangement which will better express their real affinities. The results of my study of the group may be expressed in tabular form in the following:

Key to the Species and Subspecies of Eupsychortyx.

Based on Adult Males Only.

- A. Breast plain.
 - a. Above darker, crest shorter. *Eupsychortyx sonnini sonnini.*
 - a'. Above paler, crest longer. *Eupsychortyx sonnini mocquersyi.*
- A'. Breast spotted with white.
 - a. Superciliary and malar stripes amber brown.
 - b. Superciliary stripe without black spots or streaks intermixed.
 - c. White of head more extended, occupying anterior half of throat; breast less heavily spotted with white. *Eupsychortyx leucopogon leucopogon.*
 - c'. White of head more restricted, occupying chin, lores, and subloral region only; breast more heavily spotted with white. *Eupsychortyx leucopogon leucotis.*
 - b'. Superciliary stripe with spots or streaks of black.
 - c. Coloration deeper and richer, the breast almost or quite as deeply colored as the throat. *Eupsychortyx leucopogon decoratus.*
 - c'. Coloration duller and paler, the breast conspicuously paler than the throat. *Eupsychortyx leucopogon littoralis.*
 - a'. Superciliary and malar stripes black.
 - b. Upper parts darker, more rufescent. *Eupsychortyx cristatus cristatus.*
 - b'. Upper parts paler, more grayish. *Eupsychortyx cristatus horvathi.*

***Eupsychortyx sonnini sonnini* (Temminck).**

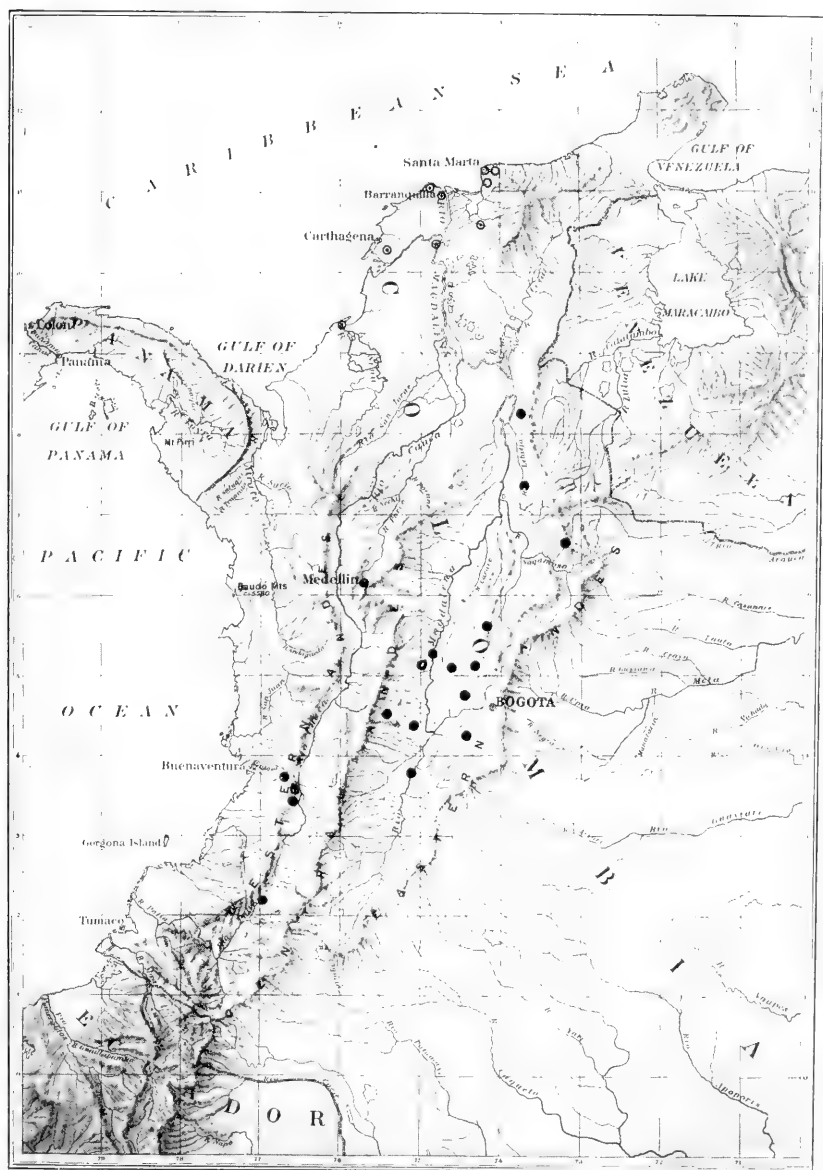
Plate V, figures 1-2.

"*Coturnix eleganter variegata, & cristata*" BARRERE, *Essai sur l'histoire naturelle de la France equinoxiale*,² 1741, 129 (French Guiana; descr., etc.).

²This title, however, did not appear until the second edition came out in 1749.

- "*Coturnix fronte sordide albicante*" ROZIER, Journ. de Physique, II, i, 1772, 217, pl. 2 ([French] Guiana; descr.).
- "*Caille de Cayenne*" VIREY, in BUFFON, Hist. Nat. Ois., Sonnini ed., VII, 1802, 133 (French Guiana; descr.; habits).
- Perdix sonnini* TEMMINCK, Hist. Nat. et Gén. Pigeons et Gallinaces, III, 1815, 451 (French Guiana; orig. descr.; type in Paris Mus.; habits, etc.), 737 (diag.; references).—VIEILLOT, Nouv. Dict. d'Hist. Nat., XXV, 1817, 246 (descr.; habits).—VIEILLOT, Tabl. Enc. et Méth., I, 1820, 369 (descr.; habits).—TEMMINCK, Pl. Col., V, 1823, pl. 75 and text (descr.; habits).
- Ortyx sonnini* STEPHENS, in Shaw's Gen. Zool., XI, 1819, 383 (descr.; habits; references).—JARDINE and SELBY, Ill. Orn., I, 1828, text to pl. 38 (diag.; range; references).—LESSON, Ill. Zool., I, 1831, text to pl. 52 (diag.; range).—GRAY, List Spec. Birds Brit. Mus., III, 1844, 44 (British Guiana; references).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; references).—REINHARDT, in NEWTON, Ibis, 1861, 114 (crit.).—GRAY, List Spec. Birds Brit. Mus., V, 1867, 77 (British Guiana; references).—VON PELZELN, Orn. Brasiliens, iii, 1870, 290 (Forte do S. Joaquim, Rio Branco, Brazil), iv. (faunal range).—GRAY, Hand-List Birds, II, 1870, 273 (range).
- "Sonnini's Quail" LATHAM, Gen. Hist. Birds, VIII, 1823, 328 (descr.; references).
- (?) *Ortyx affinis* VIGORS, Proc. Com. Sci. and Cor. Zool. Soc. London, 1830, 3 ("Mexico"; orig. descr.; type in coll. ?).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; ref. orig. descr.).—REINHARDT, in NEWTON, Ibis, 1861, 115 (crit.).
- Colinus sonnini* LESSON, Traité de Orn., 1831, 508 (in list of species; range).
- Ortyx parvicristatus* GOULD, Proc. Zool. Soc. London, 1843, 106 ("Bogotá," Colombia; orig. descr.; type in coll. Brit. Mus.).—GRAY, List Spec. Birds Brit. Mus., III, 1844, 44 ("S. Am."; ref. orig. descr.).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; references).—GRAY, Hand-List Birds, II, 1870, 273 ("Bogotá," Colombia, in range).
- Ortyx cristatus* (not *Tetrao cristatus* LINNÆUS) CABANIS, in SCHOMBURGK, Reisen in Britisch-Guiana, III, 1848, 747 (British Guiana; habits).—BROWN, Canoe and Camp Life in British Guiana, 1876, 268 (Cotinga River and Rupununi Savannas, British Guiana).
- (?) *Eupsychortyx affinis* GOULD, Mon. Odontophorinæ, 1850, 16 (descr.; crit.; Vigors' record).
- Eupsychortyx sonnini* GOULD, Mon. Odontophorinæ, 1850, pl. 11 and text (descr.; syn.; range—"Guiana, Caraccas, and the southern provinces of Mexico").—NEWTON, Ibis, 1860, 308 (St. Thomas, West Indies).—CASSIN, Proc. Acad. Nat. Sci. Philadelphia, 1860, 378 (St. Thomas, West Indies).—SCLATER and SALVIN, Proc. Zool. Soc. London, 1869, 252 (Plain of Valencia, Venezuela).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 138 (in list of species; range).—GIEBEL, Thes.

- Orn., II, 1875, 142 (Gould's reference).—HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294 ("South America").—CORY, Auk, IV, 1887, 225 (St. Thomas, West Indies; references; crit.).—CORY, Birds W. Indies, 1889, 224 (St. Thomas, West Indies; descr.; references).—CORY, Cat. W. Indian Birds, 1892, 96 (St. Thomas, West Indies).—VON BERLEPSCH, Journ. f. Orn., XL, 1892, 99, in text (French Guiana; Quonga, British Guiana; crit.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 409 (Forte do Rio Branco, Brazil; Quonga, British Guiana; Caracas, Venezuela; Mustique I., Grenadines; syn.; descr.).—HARTERT, Ibis, 1893, 306, in text, 338, note (range; crit.).—HARTERT, Bull. Brit. Orn. Club, III, 1894, 37, in text (Plain of Valencia, Venezuela).—HARTERT, Ibis, 1894, 430, in text (Plain of Valencia, Venezuela).—HARTERT, Nov. Zool., I, 1894, 675, in text (crit.).—PHELPS, Auk, XIV, 1897, 367 (Cumanacoa and San Antonio, Venezuela).—OGILVIE-GRANT, Hand-Book Game-birds, II, 1897, 130 (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45 (range).—OGILVIE-GRANT, Ibis, 1902, 239 (Quonga, British Guiana; Mustique I., Grenadines; crit.).—DUBOIS, Syn. Avium, II, 1902, 820 (references; range).—VON BERLEPSCH and HARTERT, Nov. Zool., IX, 1902, 121 (Altagracia, Venezuela; range; crit.), 275 (St. Thomas, West Indies).—HAGMANN, Bol. Mus. Gœldi, IV, 1904, 302 (von Pelzeln's reference).—CLARK, Proc. Boston Soc. Nat. Hist., XXXII, 1905, 246 (St. Vincent and Mustique I., West Indies).—VON IHERING, Aves do Brazil, 1907, 17 (range—"Rio Branco e Rio Negro," Brazil).—PENARD, Vogels van Guyana, I, 1908, 310 (descr.; range; habits).—VON BERLEPSCH, Nov. Zool., XV, 1908, 296 (Cayenne, French Guiana, *ex* Sonnini; British Guiana, *fide* Whiteley).—CORY, Field Mus. Orn. Series, I, 1909, 239, in text (British Guiana and Caracas, Venezuela, crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).—CHERRIE, Mus. Brooklyn Inst. Sci. Bull., II, 1916, 357 (lower Orinoco River, Venezuela).—CHUBB, Birds Brit. Guiana, I, 1916, 31 (Takutu Mountains, Abary River, and Great Savannas, British Guiana; descr.; range; habits).
- Eupsychortyx parvicristatus* GOULD, Mon. Odontophorinæ, 1850, pl. 12 and text (descr.; range; crit.).—SCLATER, Proc. Zool. Soc. London, 1855, 163 ("Bogotá," Colombia).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 138 (in list of species; range).—VON PELZELN, Ibis, 1875, 331 ("Spanish Guiana").—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294, part ("Bogotá," Colombia).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 410 ("Bogotá," Colombia; syn.; descr.; crit.).—OGILVIE-GRANT, Hand-Book Game Birds, II, 1897, 131 (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45 (range).—DUBOIS, Syn. Avium, II, 1902, 820 (references; range).—VON BERLEPSCH and HARTERT, Nov. Zool., IX, 1902, 121, in text (crit.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).

DISTRIBUTION OF *EUPSYPHORTYX* IN COLOMBIA

● *E. leucopogon leucotis*, ⊙ *E. l. decoratus*, ○ *E. l. littoralis*.

- Eupsichortyx sonninii* BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).
Eupsichortyx parvicristata BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).
Ortyx parvirostris (lapsus) GRAY, List Spec. Birds Brit. Mus., V, 1867, 77 ("Bogotá," Colombia; references).
Eupsychortyx cristatus (not *Tetrao cristatus* Linnæus) SALVIN, Ibis, 1886, 175 (Cabanis' British Guiana reference).—(?) HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294, part ("Guiana").
Odontophorus sonnini GELDÍ, Aves do Brazil, ii, 1894, 439 (Rio Branco, Brazil).
Eupsychortyx [sonnini] FERRY, Condor, X, 1908, 226 (Caracas, Venezuela; habits).
Colinus cristatus parvicristatus CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 199 (Fómeque and Quetame, Colombia; range; crit.).

Description.—Male: forehead, lores, and crown varying from soiled white to buffy or grayish brown, the crest similar but usually darker; broad superciliaries, beginning above the eye, amber brown, margined above by a narrow and irregular line of black; auriculars hair brown or drab; nape ochraceous tawny, varied with black bars on the feathers; throat amber brown; neck all around with a collar of black and white and chestnut spots, this collar broadest on the sides of the neck, where it is produced forward to the auriculars; upper parts varying from auburn to bistre or sepia, tinged more or less with grayish, vermiculated with black and irregularly mottled with black and brown; tertiaries and scapulars similar but more boldly marked, the feathers with buffy margins, giving a streaked appearance; tail mouse gray or hair brown, or even dusky, indistinctly barred and mottled with whitish or buffy; wings hair brown, the secondaries mottled with buffy or grayish on the outer webs, the upper coverts colored like the back; under wing-coverts hair brown, margined and tipped with white; breast russet, tinged with grayish, nearly or quite immaculate, but showing faint and irregular dusky vermiculations, especially laterally; rest of under parts chestnut or amber brown, passing into buffy posteriorly, everywhere spotted with white, each spot surrounded (except on the outer margin) with black; under tail-coverts white or buffy white, sometimes tinged with ochraceous, with notched black shaft-streaks; "iris brown; bill black; feet pale horn color" (Carriker).

Female similar in general to the male, but head and under parts different; forehead, crown, and crest much darker, brown or nearly black, the nape similar, varied with ochraceous; superciliaries and throat raw sienna to ochraceous tawny, the throat spotted or streaked, more or less heavily, with black; neck-collar of black and white spots almost obsolete in front; spots on the under surface beginning close up to the throat on

the breast, which is fawn color or wood brown at first; centers of the feathers of the sides and flanks tinged with Brussels brown or antique brown.

Measurements.—Male (ten specimens) wing, 96–106 (average, 102); tail, 57–67 (62); bill, 12–13 (12.7); tarsus, 25–30 (27.5). Female (six specimens); wing, 95–99 (97); tail, 58–62 (60); bill, 12–13 (12.5); tarsus, 25–28 (26).

Range.—From Guiana and extreme northern Brazil to Venezuela (except the Cariaco Peninsula) and Colombia, east of the Andes.

Remarks.—The earliest mention of this species which I can trace is that by Pierre Barrere, who refers to it in his work on the natural history of French Guiana, published in 1741. The Abbé Rozier gave a brief and rather unsatisfactory description of it in 1772, but in 1802 a signed article by Virey appeared in Sonnini's edition of Buffon's "Histoire Naturelle de Oiseaux," giving a much fuller account of the bird as observed in French Guiana. It was formally described by Temminck under a binomial name in 1815, from specimens said by him to have been given to the Paris Museum, where presumably they still are. Vieillot, Latham, and the other authors of that time apparently knew the species only from these earlier sources, which they usually quote. Early in 1830 Vigors described a quail from an unknown locality under the name *Ortyx affinis*, and Gould another from Colombia in 1843 as *Ortyx parvicristatus*. This brings us down to 1850, the year when Gould's "Monograph of the Odontophorinæ" appeared. In this work Gould figured and described both *sonnini* and *parvicristatus*, referring them to his new genus *Eupsychortyx*, but did not consider it necessary to figure *affinis*, regarding it as too close to *sonnini*. Subsequent authors have accepted both *sonnini* and *parvicristatus* mainly on Gould's authority, as one after another records began to come in from British Guiana, Venezuela, and even as far south as Brazil. All these were duly referred to *sonnini* (although sometimes with misgivings), except that Cabanis, possibly by inadvertence, confused the British Guiana bird with *cristatus*.

It would appear that up to the time of Dr. Chapman's recent explorations in Colombia no specimens from that country with authentic data were available, the alleged species *parvicristatus* being known only from so-called "Bogotá" skins. Indeed, his

collectors failed to secure any specimens whatever, although they saw a flock at Quetame probably belonging to this species, and the two skins with a definite locality attached which he records were secured through another party. More recently Mr. M. A. Carriker, Jr., has sent in three fine specimens from Palmar, in the State of Boyaca. Equipped with this material, I must confess my inability to distinguish the Colombian bird from that of Venezuela and Guiana, all the characters mentioned by Gould, and relied on by Messrs. Ogilvie-Grant and Chapman to separate it therefrom reappearing again and again in the latter series. The comparative shortness and bluntness of the feathers of the crest is a very elusive character indeed, depending as it does considerably upon the state of wear, but I am able to match the Colombian specimens very closely by certain individuals from elsewhere, and under such circumstances cannot see my way clear toward recognizing *parvicristatus* even as a subspecies, as has been suggested by Messrs. von Berlepsch and Hartert. But while geographic variation seems thus to be *nil*, the amount of individual variation that obtains is astonishing, and makes it difficult to frame a description which will fit all specimens in every particular. The phase described above is what may from its frequency be considered the normal one. The general tone of the upper parts, however, varies greatly, perhaps to some extent according to season, some specimens being deeply rufescent, other more brownish by comparison, and others still paler, more grayish. The forehead and crest also vary considerably in exact shade of color, but it is in the color of the throat that the variation is greatest. Normally the throat is plain amber brown, but in some specimens it is pure white, and in others white, shaded with ochraceous laterally, and spotted with black medially. In extreme cases it is amber brown, interrupted by a median band of black-tipped white feathers. It was obviously a bird of this sort which formed the basis of the description of *Ortyx affinis* Vigors. What the significance of these variations may be I cannot say; they occur in examples coming from the same localities as normal individuals, with which they are connected by intermediates. In any case it is very doubtful if age has anything to do with the matter.

Another variable feature is the extent and character of the spotting below. In some specimens the spots are well developed on the chest, while in others from the same locality the chest is almost as immaculate as the breast. In some examples the dark markings below assume the form of bars. In what appear to be younger birds the breast is much paler, more like that of the female, while the chest and abdomen are tinged with buffy. Mr. Ogilvie-Grant describes a "quite young bird" as having "the upper parts very similar to those of the female adult, but all the feathers of the mantle, wing-coverts, scapulars, and chest have pale buff shaft-stripes; chin and throat white, rest of the underparts white irregularly barred with black." The youngest bird examined by me shows traces of this plumage; it has broad black and brown shaft-streaks on the sides. The female of this species may be distinguished from that of the others of this group by the color of the under parts, there being a band of fawn color or wood brown, more or less decided, on the breast just below the neck-band, varied with a few small white spots or dark markings; the variation in exact shade and pattern is considerable, however. A female from Naguanagua (near La Cumbre de Valencia), Venezuela (No. 35,163, Collection Carnegie Museum), is so very peculiar that it can only be referred to *sonnini* provisionally, on geographical grounds mainly. It lacks the breast-band entirely, this part being barred irregularly with plain brownish black and white; the throat is squamate rather than streaked.

The capture of several specimens of this quail in the Serra da Lua, near Boa Vista, on the Rio Branco, northern Brazil, by Messrs. M. P. Anderson and R. H. Becker, working in the interest of the Field Museum of Natural History, appears to constitute the most southerly record for the species. These specimens so far as I can see are not essentially different from those coming from other sections. The Carnegie Museum possesses a nice series of ten specimens from the region south of Lake Valencia in Venezuela, where the species is said to be common. It has been introduced into St. Thomas, St. Vincent, Mustique, and probably other islands of the Lesser Antilles. Its range to the west appears to be strictly limited by the Andes of Meridá in Venezuela and by the Eastern Andes in Colombia. Schomburgk

states that in British Guiana the species occurs in flocks of from twelve to eighteen individuals in the oases of the savannas, outside of which it rarely ventures far, running or flying into the woods upon being disturbed. The late John F. Ferry, who met with the bird near Caracas, Venezuela, says that he flushed a covey among the forlorn, bushy hills of that section, where they darted off and sought safety in a patch of the densest shrubbery. Returning a few days later he again flushed them in the same spot and succeeded in securing a specimen. "All their habits that I observed were typically quail-like."

Specimens examined.—Colombia: "Bogotá," 2; Fómeque, 2; Palmar, Boyaca, 3. Venezuela: Caracas, 4; Naguanagua, 1; El Trompillo, Carabobo, 10; San Antonio, Bermudez, 1; Agua Salada de Ciudad Bolivar, 3; Altigracia, 2; San Mateo de Caicara, 1; Maripa, Rio Caura, 6; San German de Upata, 1. British Guiana: Courantyne River, 2. Dutch Guiana: "Surinam," 1; Paramaribo, 1; "Guiana," 1. Brazil: Serra da Lua, near Boa Vista, 5. West Indies: St. Thomas, 3. Unspecified, 4. Total, 53.

***Eupsychortyx sonnini mocquerysi* Hartert.**

Plate V, figure 3.

Eupsychortyx sonnini (not *Perdix sonnini* Temminck) CASSIN, Proc. Acad. Nat. Sci. Philadelphia, 1860, 378, part (Cumaná, Venezuela).—OGILVIE-GRANT, Ibis, 1902, 239, part (Margarita I., Venezuela, *ex* Richmond).

Eupsychortyx mocquerysi HARTERT, Bull. British Orn. Club, III, 1894, 37 (Cumaná, Venezuela; orig. descr.; type in coll. Tring Mus.)—HARTERT, Ibis, 1894, 430 (reprint orig. descr.).—HARTERT, Nov. Zool., I, 1894, 675, pl. 15, fig. 2 (Cumaná, Venezuela; crit.).—OGILVIE-GRANT, Hand-Book Game-Birds, II, 1897, 131 (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45 (ref. descr.; range).—DUBOIS, Syn. Avium, II, 1902, 820 (references; range).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).

Eupsychortyx pallidus RICHMOND, Proc. U. S. Nat. Mus., XVIII, 1896, 657 (Margarita I., Venezuela; orig. descr.; type in coll. U. S. Nat. Mus.; habits, *ex* Robinson).—SHARPE, Hand-List Birds, I, 1899, 45 (ref. orig. descr.; range).—CLARK, Auk, XIX, 1902, 260 (Margarita I., Venezuela; habits).—LOWE, Ibis, 1907, 551 (Margarita I., Venezuela; crit.).—LOWE, Ibis, 1909, 322 (Cariaco Peninsula, Venezuela).—KNOWL-

TON, *Birds of the World*, 1909, 296 (Margarita I., Venezuela; habits, *ex* Robinson).—CORY, *Field Mus. Orn. Series*, I, 1909, 238 (Mocanao and Boca del Rio, Margarita I., Venezuela; meas.; crit.).—BRABOURNE and CHUBB, *Birds S. Am.*, I, 1912, 13 (ref. orig. descr.; range).

Eupsychortyx sonnini var. *pallida* DUBOIS, *Syn. Avium*, II, 1902, 829 (ref. orig. descr.; range).

Subspecific characters.—Male: similar to that of *Eupsychortyx sonnini*, but upper parts paler, spotting of under parts purer white, and crest paler and longer. Female generally paler, more grayish, less brownish above than in *sonnini*, and rather whiter, less buffy below.

Measurements.—Male (seven specimens): wing, 99–105 (average, 101); tail, 57–69 (60); bill, 12.5–13.5 (13); tarsus, 26–29 (28). Female (five specimens): wing, 101–104 (102.5); tail, 61–64 (62); bill, 12–13.5 (13); tarsus, 26–28 (27).

Range.—Cariaco Peninsula, extreme northeastern Venezuela, and outlying island of Margarita.

Remarks.—When Dr. Richmond described the Margaritan bird as a distinct species in 1896 he had but three specimens for comparison with two unsatisfactory examples of *sonnini*; nevertheless, it was “considered desirable to separate the two forms on the evidence presented, and on the fact that at least two other species (*Doleromya* and *Speotyto*) characteristic of the cactus thickets are pale representatives of mainland birds.” Mr. Cory in 1909, with more and better material before him of the insular bird, but still with a very inadequate representation of true *sonnini*, was at some pains to point out the variations observable in his series, which, however, he says are distinctly the reverse of being paler than mainland specimens, and he is inclined to attribute the color of the type of *pallidus* to season. Dr. Percy R. Lowe, who visited Margarita in 1904, refers to the pale coloration of examples from that island, and on comparing the series collected there by Messrs. Robinson, Clark, and Ferry with another from the mainland of Venezuela it is obvious that the former are paler, although individual specimens might be hard to distinguish. The type of *pallidus* is merely an unusually pale individual. Small as it is, the series runs through precisely the same set of variations with regard to the color of the throat as does the typical form, some having the throat Sudan brown, others white, and still others mixed black and white or ochraceous. In the white-throated specimens (*cf.* Plate V, figure 3) the forehead and

sides of the head are mainly white or buffy white; they thus correspond to the description and figure of *Eupsychortyx mocquersyi* Hartert, described from Cumaná, on the mainland opposite Margarita Island. It is fair to presume that this is the same bird, and the name having two years' priority will have to supersede *pallidus* of Richmond. Dr. Lowe, indeed, refers specimens from the Cariaco Peninsula to the latter without comment, and it is worthy of note that the faunal conditions here are precisely the same as on Margarita. Under these circumstances I fail to see how we can avoid accepting Dr. Hartert's name, based on the white-throated phase, for the insular as well as the Cumaná birds.

In view of the extensive range of *sonnini* and the large amount of individual variation to which it is subject, it is somewhat surprising to find a geographical variant with such a restricted distribution. Evidently the excessive aridity of its habitat has operated to produce pallor, as in the case of several other species similarly affected. Lieutenant Robinson writes as follows concerning its habits as observed by him: "These handsome birds were abundant in the thorny thickets near the coast, but none were seen in the interior of the island. They ran through the cactus undergrowth with incredible swiftness and it was a difficult matter to cause them to take wing. The call of the male is identical with that of our common bob-white, and the call of the scattered members if a covey is also the same. The native name is 'perdiz.'" Mr. Clark found the bird "common along the bases of the hills, and in the scrub on their lower slopes." The late Mr. Ferry found it "in abundance at Mocanao, the peninsula at the west end of the island, and in riding along the cactus-covered plains from Boca del Rio (south-central part of the island) we saw several flocks."

Specimens examined.—Venezuela: Margarita Island, 11; El Vallé, Margarita Island, 1. Total, 12.

***Eupsychortyx leucopogon leucopogon* (Lesson).**

Plate V, figure 4.

Ortyx leucopogon LESSON, Rev. Zool., 1842, 175 ("San Carlos," Central America; orig. descr.; type in coll. Paris Mus.[?]).—DES MURS, Icon. Orn., 1846, text to pl. 36 (descr.; range).—GRAY, Gen. Birds, III, 1846,

514 (in list of species; ref. orig. descr.).—GRAY, Hand-List Birds, II, 1870, 273 (in list of species; references; range).

Eupsychortyx leucopogon GOULD, Mon. Odontophorinæ. 1850, text to pl. 13 ("San Carlos," in range; descr.; references).—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 408, part, (Veragua; crit.).—OGILVIE-GRANT, Hand-Book Game-Birds, II, 1897, 130, part (syn.; descr.; range).—SHARPE, Hand-List Birds, I, 1899, 45, part (Panama, in range).—DUBOIS, Syn. Avium, II, 1902, 819 (references; range).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 295, part (Calobre and "San Carlos," Panama; descr. male; references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13, part (ref. orig. descr.; range).

Eupsychortyx leucotis (not *Ortyx leucotis* Gould) SALVIN, Ibis, 1876, 379 (Calobre [?], Veragua; crit.).

Description.—Adult male: forehead, crest, auriculars, and anterior half of throat and malar region soiled white; broad superciliary stripe, beginning above the eye, antique brown, bordered above by a narrow and irregular line of black which reaches the hindneck; nape medially dull cinnamon buff, obscurely mottled with dusky; sides of the neck marked with black and white, the feathers being white, with triangular black terminal spots, these spots tending to form a collar on the hindneck; upper parts sepia brown, tinged with russet anteriorly, vermiculated with black and irregularly mottled with black and argus brown centers to the feathers; scapulars, tertials, and wing-coverts with some white spots and irregular white edgings; upper tail-coverts and tail hair brown, finely mottled with soiled white, the markings tending to irregular bars; wings hair brown, the secondaries obscurely mottled externally with dull buffy; under wing-coverts hair brown, tipped with soiled white; posterior half of throat and malar region antique brown or chestnut, succeeded by a partly concealed collar of white spots; breast and sides hazel, everywhere marked with rounded twin terminal spots of white and subterminal bars of black, these spots becoming larger on the flanks, where they run several to each feather; chest and upper abdomen ochraceous buff medially, barred irregularly with black, each feather of these parts being barred with black and white and broadly tipped with ochraceous buff; lower abdomen plain buffy; under tail-coverts black, with white spots on each web.

Female similar to the male above, but the dark markings in general coarser; forehead and crest deep brown; superciliaries indistinct, ochraceous buff streaked with black; throat and malar region ochraceous or buffy, streaked with black; under surface from the throat down spotted with white and barred with black as in the male, but with very little rufescent color in evidence; chest and abdomen strongly tinged with buffy medially; dark markings of the under parts all coarser posteriorly and laterally.

Measurements.—Adult male (two specimens): wing, 95–101; tail, 55–57; bill, 13; tarsus, 28.5–30. Female (two specimens): wing, 97–102; tail, 50–58; bill, 12.5–13; tarsus, 28–31.

Range.—Western Panama.

Remarks.—Little appears to be known of this form, which is moreover involved in serious complications. It was described in 1842 by Lesson from “San Carlos, Americæ centralis Oceani Pacifici.” In the same paper he describes two other species, *Crypticus apiaster* and *Pitylus lazulus*, from the same place, as well as several additional new forms from Realejo, Nicaragua, and Acapulco, Mexico, all collected by his brother, Adolphe Lesson. Now, the type-locality of *Pitylus lazulus* stands in the American Ornithologists’ Union “Check-List of North American Birds,” ed. 3, 1910, 285, as San Carlos, Salvador, while in the case of *Crypticus apiaster* Mr. Ridgway (Bulletin U. S. National Museum, No. 50, VI, 1914, 481, note) reaches provisionally the same conclusion. It follows, therefore, either that Lesson’s type did not actually come from San Carlos, or that this particular form ranges much farther north than has heretofore been supposed, overlapping the range of “*Eupsychortyx*” *leylandi*. Judging by analogy, the latter supposition seems most unlikely. Lesson’s description, brief as it is, seems perfectly applicable to the bird from Panama which we have described above, since he expressly says “fronte gulaque albidis, * * * collari antici, rufo.” Turning now to Des Murs’ work for further light on the matter, we find a discrepancy between the two descriptions, all the more remarkable because Des Murs states that “our figure is taken from an individual sent by the Honorable M. Lesson to the Museum of Natural History of Paris, in the galleries of which it figures today” (translation). Here the bird is figured and described as having the forehead and the throat white, but no mention is made of any rufous collar on the lower throat. On the other hand, “a white eyebrow starts from the outer angle of the eye, separated from the white of the throat by the brownish red which colors the cheeks” (translation). This part of the description is of course entirely inapplicable to our bird, but on referring to Gould we find that he too figures a precisely similar specimen. So conspicuous is this discrepancy that Mr. Ogilvie-

Grant is led to remark that "the striking differences shown in Gould's plate are probable improvements on nature, and the chestnut band which commences behind the eye and crosses the ear-coverts in his figure no doubt really represents the superciliary stripe." He remarks also: "I have not the slightest doubt that the bird from 'San Carlos in Central America' which formed the type of Lesson's *O. leucopogon* was merely a rather white-throated example of this species." Gould says: "I am indebted to the Baron de la Fresnaye for the use of the specimen from which the above characters are taken; it is the only one that has come under my notice." Now, there is a specimen in the Lafresnaye Collection (No. 7265), at present deposited in the Museum of Comparative Zoology at Cambridge, Massachusetts, which is an exact counterpart of Gould's plate, and is almost certainly the original from which it was drawn. It is certainly a very peculiar bird, with its pure white throat, white front and superciliaries, and dull brownish red postocular stripe. The breast is much duller (snuff brown) than in the Panama specimens, and the white spots are fewer. The crest is darker (mummy brown), and the nape rusty rather than buffy, but otherwise the upper parts are the same.

Whether this white-throated bird represents a color-phase of *E. leucopogon*, comparable to those of *E. sonnini*, or is a distinct species with a definite range, I am not prepared to say, preferring to await the receipt of further specimens and the re-examination of Lesson's type. Meanwhile I accept the name *leucopogon* for the bird from western Panama on the basis of the original description, waiving for the time being the question of the type-locality. The two males examined differ from the other forms of this group in having the throat distinctly and rather abruptly bicolor, the upper half white, the lower half antique brown; the forehead, crest, malar, and loreal regions are also white. The upper parts are dark as compared with the allied races; this is not only because of the darker color of the ground-color itself, but also because of the prevalence of dark markings. Females, too, are very dark above, and heavily marked below.

Arcé secured at least three specimens of this form in Veragua, presumably from the vicinity of Calobre. The Agua Dulce

examples listed herewith are from the von Berlepsch collection; they are labeled as having been taken by R. Herrera in December, 1877. Nothing whatever is on record concerning its habits.

Specimens examined.—Panama: Agua Dulce, 3; unspecified, 1. Unspecified, 1. Total, 5.

***Eupsychortyx leucopogon leucotis* (Gould).**

Plate V, figure 5.

Ortyx leucotis GOULD, Proc. Zool. Soc. London, 1843, 133 ("Bogotá," Colombia; orig. descr.; type in coll. Brit. Mus. [?]).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; ref. orig. descr.).—GRAY, List Spec. Birds Brit. Mus., V, 1867, 77 ("Bogotá," Colombia; references).—GRAY, Hand-List Birds, II, 1870, 273 (ref. descr.; range).

Eupsychortyx leucotis GOULD, Mon. Odontophorinæ, 1850, pl. 10 and text (descr.; crit.).—SCLATER, Proc. Zool. Soc. London, 1855, 163 ("Bogotá," Colombia).—SCLATER and SALVIN, Nom. Avium Neotrop., 1873, 138, (in list of species; range).—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—SCLATER and SALVIN, Proc. Zool. Soc. London, 1879, 544 (Medellin, Antioquia, Colombia; descr. eggs).—ROBINSON, A Flying Trip to the Tropics, 1895, 101, 153, part, pl. (Guaduas and Honda, Colombia; habits).

Eupsichortyx leucotis BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).

Eupsychortyx leucopogon (not *Ortyx leucopogon* Lesson) OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 408, part ("Bogotá" and Medellin, Colombia; syn.; descr.; crit.).—SHARPE, Hand-List Birds, I, 1899, 45, part (Colombia, in range).—OATES, Cat. Birds' Eggs Brit. Mus., I, 1901, 66 (Medellin, Colombia; descr. eggs).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, III, 1903, 295, part (Antioquia, Colombia; descr. female; references).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13, part (range).

Colinus cristatus leucotis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 199 (Colombian localities [Caldas, Cali, La Sierra, El Eden, Chicoral, Honda, Purificacion, Fusugasuga, Anolaima, El Carmen, El Alto de la Paz]; range).

Subspecific characters.—Similar to *Eupsychortyx leucopogon leucopogon*, but upper parts paler, more grayish vinaceous, less brownish; white area of head in male restricted to chin, lores, and sub-loral region; breast more thickly spotted with white, and ground color paler, more russet; female with the throat, superciliaries, etc., not so heavily streaked, and the under surface in general whiter, the dark markings more restricted.

Measurements.—Male (twelve specimens): wing, 94–104 (average, 99); tail, 56–67 (60); bill, 11–13.5 (12.6); tarsus, 24–31 (28). Female (ten specimens): wing, 93–107 (99); tail, 57–65 (61); bill, 12–13 (12.7); tarsus, 24–30 (27.5).

Range.—Andean region of Colombia, from Antioquia and Santander south at least to the headwaters of the Rio Patio.

Remarks.—This form was described by Gould in 1843 as a distinct species, and figured a few years later. Naturally he considered it very distinct from *E. leucopogon* as he understood that species, and compared it only with *E. cristatus*. There can be no question, however, that *leucopogon* (as described in the present paper) and *leucotis* are conspecific, the differences between them being only of racial value. Indeed, specimens from western Colombia (Caldas and El Eden) in their paler throats, with the white of the chin more extended, whiter crests, and browner upper parts suggest an approach to *leucopogon*, and further material from this region would be most desirable. Although Salvin, misled by Gould's plate of *E. leucopogon*, referred his Veraguan specimens to *E. leucotis*, and Mr. Ogilvie-Grant, while remarking the difference between these and specimens from Antioquia, nevertheless lists both series under the earlier name, the two are sufficiently distinct from the standpoint of a trinomialist. The Colombian bird agrees with *leucopogon* in the color of the superciliary and malar stripes, which are amber brown, with practically no black in the former and very little in the latter, but the general coloration is paler, and the white of the head is more restricted. The flank-streaks in *leucotis* are apt to be black, with more or less russet centers, instead of rich hazel, with black mottling. Individual variation is considerable, however, affecting the color of the forehead and chin (which in some specimens is decidedly grayish) and the spotting of the under parts. I have examined at least two males (Nos. 112,275, Collection American Museum of Natural History, Chicoral, Colombia, and 59,602, Collection Carnegie Museum, Pena Blanca, Colombia) in which the breast has little or no russet color; being merely spotted black and white. The Peña Blanca bird has also a very pale throat, more like that of *littoralis*, and may indicate intergradation in the direction of *cristatus*, but as it is in the moult, and may be a young bird, I

cannot be sure. A female from this same locality has a pure white throat (except for a few irregularly scattered black feathers), and agrees with two females in the Lafresnaye Collection in this respect.

Gould's type of *leucotis* was a "Bogotá" skin, numerous examples of which he says came under his notice from time to time. Dr. Chapman has recently suggested Honda, on the Magdalena River northwest of Bogotá, as a more precise type-locality. He goes on to say: "This is a species of the Tropical Zone which in open country ranges upward into the Subtropical and even to the lower border of the Temperate Zone. It occurs on the western slope of the Western Andes in the arid Caldas Basin, is not uncommon in the Cauca Valley and is found as far south as La Sierra south of Popayan, this marking the southern known limits of the genus. In the upper Magdalena Valley it is abundant. To the west it reaches up the Central Andes to at least 8300 feet, and to the east we have specimens from the Eastern Andes almost up to the border of the Bogotá Savanna. Quail are said to occur in the Savanna but we have not succeeded in securing specimens and cannot say whether the Savanna quail is *leucotis* or *parvicristatus* or an intergrade between the two."

Mr. Carriker sent in a small series of this form from Aguachica, on the Magdalena River, and from El Tambor and Peña Blanca in Santander, while Lieutenant Robinson met with it at Guaduas and Honda, but secured only two specimens. "We found it impossible to flush them a second time; and it so happened that whenever we got shots, our guns were loaded with dust-shot, so we failed to stop the birds." (It may be remarked in passing that the plate in Lieutenant Robinson's book is a very poor representation, being much too red.) Salmon secured eggs at Medellin, in Antioquia; they are described as creamy buff, marked with pale rufous freckles and blotches.

Specimens examined.—Colombia: Guaduas, 2; Aguachica, 7; El Tambor, 2; Peña Blanca, 6; Caldas, 2; Yumbo, 2; Cali, 1; Chicoral, 4; El Eden, 1; Anolaima, 1; Fusugasuga, 1; Honda, 9; Mariquita, 2; El Alto de la Paz, 5; Purificacion, 1; "Bogotá," 4; "Colombian Andes," 1; "New Granada," 1. Unspecified, 2. Total, 54.

Eupsychortyx leucopogon decoratus* Todd.Plate V, figure 6.*

Eupsychortyx parvicristatus (not *Ortyx parvicristatus* Gould) HEINE and REICHENOW, Nom. Mus. Heineani Orn., 1887, 294, part (Barranquilla, Colombia).

Eupsychortyx leucotis (not *Ortyx leucotis* Gould) ROBINSON, A Flying Trip to the Tropics, 1895, 153, part (Barranquilla, Colombia).

Eupsychortyx decoratus TODD, Proc. Biol. Soc. Washington, XXX, 1917, 6 (Calamar, Colombia; orig. descr.; type in coll. Carnegie Mus.).

Colinus cristatus decoratus CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 198 (Calamar and Turbaco, Colombia; crit.).

Subspecific characters.—Similar to *Eupsychortyx leucopogon leucotis*, but more richly and deeply colored throughout, the male with the throat rich chestnut, the breast almost or quite concolor, and the white spots smaller; sides and flanks very heavily marked with chestnut; superciliary and malar stripes much varied with black. Female more heavily marked below, the throat more decidedly tinged with buffy ochraceous, and more heavily streaked with black.

Measurements.—Male (seven specimens): wing, 99–105 (average, 103); tail, 60–69 (66); bill, 12.5–13 (13); tarsus, 29–31 (30). Female (five specimens): wing, 101–106 (102); tail, 60–63 (61); bill, 12–13 (12.7); tarsus, 28–29 (28.5).

Range.—Lower Magdalena Valley, Colombia, and westward along the coast at least to the Sinu River.

Remarks.—A small series of quail collected by Mr. Carriker at Calamar, on the lower Magdalena River, and Punto Zapote, in the delta of the Sinu River, were at first referred to *leucotis*, until comparison with specimens from the interior of Colombia showed that they did not belong to that form. So strongly marked did their characters appear by comparison, and such was the uncertainty in the writer's mind as to the inter-relations of this group, that he preferred to treat the new form provisionally as a full species. It is certainly a strongly marked subspecies, differing from *leucotis* in its much richer coloration throughout, and from *leucopogon* by its rather paler, more rufescent, less brownish upper parts, decidedly darker breast, and in particular by the restriction of the white area on the head, in which latter respect it resembles *leucotis*. Unlike either of these forms, however, it has the superciliaries conspicuously streaked with black, and

considerable black on the malar region also. Its relationships to *littoralis* will be discussed under the head of that form.

Females of this form resemble those of *leucopogon* very closely, having prominently marked under parts and heavily streaked throats; the upper parts, however, are not so decidedly brownish or so much mottled, especially anteriorly. Three young birds from Calamar (January 2 and 22) are like the adult female, but the spotting below is less distinct, and the flanks are marked with broad shaft-streaks of black centered with sayal brown; the crown and crest are brown like the rest of the upper parts.

Since this form has been described several other specimens have turned up in the collections of various institutions, all of which are duly listed herewith. As said by Dr. Chapman, it is evidently restricted to the Caribbean Fauna, and is doubtless strictly littoral in its distribution. Considerably to my surprise I find that a specimen from Fundacion, on the southern confines of the Santa Marta region, belongs here rather than to *littoralis*, but otherwise all the specimens with authentic data come from the region of the lower Magdalena and Sinu Rivers. There are a pair of birds, perfectly typical of this form, in the collection of the Museum of Comparative Zoology which are said to have come from the line of the Panama Railway, but the assigned locality is almost certainly a mistake. Indeed, the Biological Survey party failed to secure a single specimen of *Eupsychortyx* in their exhaustive work in this region, and the chances are that if any form of the group occurs it would be *leucopogon*.

Specimens examined.—Colombia: Fundacion, 1; Calamar, 8; Turbaco, 1; Savanilla, 1; Punto Zapote, 1; unspecified, 3. "Line of Panama Railway" (?), 2. "Orinoco" (?), 1. Total, 18.

***Eupsychortyx leucopogon littoralis* Todd.**

Plate V, figure 7.

Eupsychortyx leucopogon (not *Ortyx leucopogon* Lesson) ALLEN, Bull. Am. Mus. Nat. Hist., XIII, 1900, 127 (Bonda, Colombia).

Eupsychortyx cristatus littoralis TODD, Proc. Biol. Soc. Washington, XXX, 1917, 6 (Mamatoco, Colombia; orig. descr.; type in coll. Carnegie Mus.).

Colinus cristatus littoralis CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXVI, 1917, 198, in text (Bonda, Colombia; crit.).

Subspecific characters.—Similar in general to *Eupsychortyx leucopogon decoratus*, but the male paler throughout, the throat buffy, more or less deeply shaded with ochraceous tawny or amber brown, but not distinctly bicolor; the breast also decidedly paler, more russet; female also slightly paler, and not so heavily marked below, the throat nearly or quite immaculate.

Measurements.—Adult male (eight specimens): wing, 100–106 (average, 103); tail, 57–63 (60); bill, 11.5–13 (12.5); tarsus, 27–32 (29). Female (eight specimens): wing, 97–105 (101); tail, 55–65 (61); bill, 12–13 (12.5); tarsus, 27–30 (29).

Range.—Lower Tropical Zone of the Santa Marta region of Colombia.

Remarks.—Santa Marta specimens received from Mr. Herbert H. Smith were referred by Dr. Allen to *E. leucopogon* without comment, but, as we now know, the "*leucopogon*" of the "British Museum Catalogue" is composite, comprising two recognizably distinct races, *leucopogon* and *leucotis*, to neither of which the Santa Marta specimens can properly be referred. From the former they differ in much paler coloration throughout, the upper parts being washed with vinaceous anteriorly and with grayish and buffy posteriorly, the scapulars and tertials conspicuously margined with white or buffy and spotted and blotched irregularly, together with the lower back, with black and brown. In *leucopogon* the general tone of the upper parts is much deeper, so that the black and brown markings are not in such evident contrast; the white edgings are also far less conspicuous. The superciliaries are streaked with black in the present form, instead of being pure antique brown, as in both *leucopogon* and *leucotis*, and the throat is shaded with the same color, most heavily posteriorly, the color gradually fading out in front, while in *leucopogon* the transition is more abrupt. Compared further with *leucotis*, males have the breast more richly colored, the buffy patch on the chest and abdomen is deeper, antique brown in fact, and the under parts in general are more buffy. Females, like males, are not nearly so dark as females of *leucopogon*; they are more buffy below than the same sex of *leucotis*, as well as paler above.

With the series before me I have no difficulty whatever in separating *littoralis* from *decoratus* by its uniformly paler, duller

coloration in both sexes. There is, however, an unusual amount of individual variation in the present form, some specimens approaching *decoratus*, while others, with their pale throats and under parts and more heavily black-streaked superciliaries, verge more toward *cristatus*. So far as the evidence afforded by the examination and comparison of specimens goes, therefore, we would be justified in concluding that *littoralis* is not a subspecies or geographical race in the same sense as *decoratus*, for example, but rather stands for a set of individuals showing the respective characters of both *decoratus* and *cristatus*, combined in varying degree. In short, *littoralis* bears all the earmarks of being an intergrade between these two forms, occurring in the region where their respective ranges might naturally be supposed to meet and overlap. At Fundacion, south of Santa Marta, we find nearly typical *decoratus*, while at Rio Hacha, at the western edge of the Goajira Peninsula, we get a bird which is clearly *cristatus*, although slightly tending towards the other. It so happens, however, that west of Rio Hacha the heavy forest of the Tropical Zone comes right down to the coast, constituting a barrier to the spread of either form which may be quite as effective as the high mountain mass of the Sierra Nevada de Santa Marta itself. Indeed, it is far more likely that actual intermingling of the two forms, if it occurs at all, would be found in the low, more open country to the southward of the Sierra Nevada, which is presumably better adapted to the needs of such a bird as this. Unfortunately no evidence bearing on this point is yet available; it is clear, however, that if *cristatus* is a derivative of the *leucopogon* group, or *vice versa*, one or the other must have originally passed through this narrow gap to occupy its present range, assuming, of course, that topographical and other conditions were the same as at present.

But even if intergradation between *cristatus* and the *leucopogon* group could be fully proven it would not therefore necessarily follow (in the opinion of the writer) that the two should be regarded as conspecific. Each has characters not possessed by the other, to belittle which by degrading the forms in question to subspecific rank would seem to be highly inadvisable. Subspecies are of course "representative forms," but "representative forms"

are not necessarily subspecies, as some ornithologists of note would have us believe. It has long been the opinion of the writer that the mere fact (known or assumed) of the intergradation of two given forms should not of itself militate against their being considered distinct specifically, provided that the degree and character of the differences between them are such as to otherwise justify such standing. All the circumstances bearing on each individual case must be taken into consideration in attempting to reach a decision, and to be blindly governed by a single criterion is inevitably to go astray. The recent paper by Dr. Jonathan Dwight on the genus *Junco* (cf. *Bulletin American Museum of Natural History*, XXXVIII, pp. 269-309), considered as a protest against the current practice of reducing all intergrading forms to subspecific rank, is interesting and suggestive.

It remains to add that the present form was provisionally described as a subspecies of *E. cristatus*, being compared with mainland specimens of that form, which were incorrectly assumed to represent *horvathi*.

Specimens examined.—Colombia: Bonda, 4; Cacagualito, 1; Mamatoco, 9; Gaira, 2; Santa Marta, 2. Total, 18.

***Eupsychortyx cristatus cristatus* (Linnæus).**

Plate V, figure 8.

"Caille Hupée du Mexique" BRISSON, Orn., I, 1760, 260, pl. 25, fig. 2, excl. syn. ("Guiana and Mexico"; descr.).—D'AUBENTON, Pl. Enlum., 1770-86, No. 126.

Tetrao cristatus LINNÆUS, Syst. Nat., ed. 12, I, 1766, 277, excl. syn. part (ex Brisson; diag.).—GMELIN, Syst. Nat., II, ii, 1788, 765, excl. syn. part (diag.; references).

"Crested Quail" LATHAM, Gen. Syn. Birds, II, ii, 1783, 784, excl. syn. part ("Guiana and Mexico"; descr.).—LATHAM, Gen. Hist. Birds, VIII, 1823, 329, excl. syn. part (descr.; references).

Perdix cristata LATHAM, Index Orn., II, 1790, 652, excl. syn. part (diag.; range; references).—TEMMINCK, Hist. Nat. et Gén. Pigeons et Gallinaces, III, 1815, 446 (descr.; habits), 736, excl. syn. part (diag.; references).—VIEILLOT, Nouv. Dict. d'Hist. Nat., XXV, 1817, 247 (descr.; habits).—KUHLE, Buffoni et Daubentoni figurarum avium Coloratarum Nomina Systematica, 1820, 3 (D'Aubenton's plate).—LESSON, Traité d'Orn., 1831, 508 (in list of species; range).

- Coturnix cristata* BONNATERRE, Tabl. Enc. et Meth., I, 1791, 222, pl. 96, fig. 4 (descr.; range; references).
- Ortyx temminkii* STEPHENS, in Shaw's Gen. Zool., XI, 1819, 381 ("Mexico"; descr.; references).
- Ortyx neoxenus* VIGORS, Proc. Com. Sci. and Cor. Zool. Soc. London, I, 1830, 3 (orig. descr.; no locality specified).—(?) AUDUBON, Syn. Birds N. Am., 1839, 200 ("California" [error]; descr.; references).—BOLLE, Journ. f. Orn., IV, 1856, 167 ("Trinidad" [error]).
- Ortyx cristata* LESSON, Ill. Zool., I, 1831, text to pl. 52 ("Mexico"; diag.).—JARDINE and SELBY, Ill. Orn., 1828, I, text to pl. 38 (diag.; range; references).
- Ortyx cristatus* GRAY, List Spec. Birds Brit. Mus., III, 1844, 44 ("S. Am."; references).—GRAY, Gen. Birds, III, 1846, 514 (in list of species; references).—GRAY, List Spec. Birds Brit. Mus., V, 1867, 76 ("South America"; references).—VON PELZELN, Ibis, 1873, 36 (Latham's reference).
- (?) *Perdix neoxenus* AUDUBON, Birds Am., IV, 1838, pl. 423.—AUDUBON, Orn. Biog., V, 1849, 228 ("Northwest coast of America" [error]; descr.).
- Eupsychortyx cristatus* GOULD, Mon. Odontophorinæ, 1850, pl. 9 and text, excl. syn. part (descr.; syn.; crit.).—GARROD, Proc. Zool. Soc. London, 1873, 468 (carotid artery); 1873, 640 (muscles).—GIEBEL, Thes. Orn., II, 1875, 142 (Gould's reference).—COOPER, Bull. Nuttall Orn. Club, II, 1877, 95 (syn.).—VON BERLEPSCH, Journ. f. Orn., XL, 1892, 68 et seq., 98–100, 102 (Savonet, Curaçao; crit.).—OGILVIE-GRANT, Cat. Birds Brit. Mus., XXII, 1893, 407 (syn.; descr.; range).—HARTERT, Ibis, 1893, 305 (Aruba; crit.), 325 (Curaçao), 338 (range).—ROBINSON, A Flying Trip to the Tropics, 1895, 164 (Curaçao).—OGILVIE-GRANT, Hand-Book Game-Birds, II, 1897, 128 (syn.; descr.; range; habits).—SHARPE, Hand-List Birds, I, 1899, 45 (Curaçao and Aruba, in range).—DUBOIS, Syn. Avium, II, 1902, 819 (references; range).—HARTERT, Nov. Zool., IX, 1902, 306 (Aruba and Curaçao).—FAXON, Auk, XX, 1903, 239 (syn.).—CORY, Field Mus. Orn. Series, I, 1909, 198 (Aruba), 204 (Curaçao).
- Eupsichortyx cristata* BONAPARTE, Compt. Rend., XLII, 1856, 883 (in list of species).
- Ortyx* sp. PETERS, Journ. f. Orn., XL, 1892, 114 (Curaçao).
- Eupsychortyx gouldi* VON BERLEPSCH, Journ. f. Orn., XL, 1892, 100, in text (Curaçao; provisional new name).—HARTERT, Ibis, 1893, 305 (crit.).
- Eupsychortyx cristatus continentis* CORY, Field Mus. Orn. Series, I, 1913, 283 (El Panorama, Rio Aurare, Venezuela; orig. descr.; type in coll. Field Mus. Nat. Hist.).

Description.—Male: forehead, middle of crown, and crest buffy white, sometimes with a tinge of ochraceous; broad superciliaries, beginning above the eye, and malar stripe (sometimes obsolete) black, contrasting with the silky white auriculars, and terminating posteriorly in an area

of black and white spots on the side of the neck, each feather being white, tipped with a triangular spot of black; upper back russet, more or less shaded with gray and finely but indistinctly vermiculated with black; lower back similar but more grayish or buffy, with irregular black and ochraceous blotches on each feather, these blotches becoming streaks on the upper tail-coverts; tail indistinctly barred and finely but obscurely vermiculated with neutral gray (or dusky) and soiled white; primaries plain hair brown, their outer webs slightly paler; secondaries similar but with the outer webs finely mottled with cinnamon or dull buffy in increasing amount, the inner secondaries and scapulars colored like the lower back, and with their inner (and often outer) webs broadly edged with dull white, giving a prominently streaked appearance to these parts; wing-coverts like the back, with more or less submarginal black spotting and white edging; under wing-coverts hair brown, margined more or less broadly with white; throat plain warm buff or buffy white, abruptly contrasted with the breast, which is covered with rounded white spots, two to each feather, separated from each other by a shaft-streak of russet and preceded by a black spot or bar; these white spots grow larger on the sides and increase in number on the feathers, finally coalescing into notched streaks on the feathers of the flanks; under tail-coverts buffy, with black shaft-streaks; chest and upper abdomen with a large patch of antique brown, formed by the ends of the feathers, which are basally white, barred with black; lower abdomen buffy; "iris brown; bill black; feet pale bluish horn."

Female similar in general to the male (except for the markings of the head), but duller, the markings above coarser, the under surface paler, with more white and less brown, the chest area ochraceous buff; middle of crown (including crest) dull buffy or brown, with more or less black intermixed; broad superciliaries and throat ochraceous, with faint darker margins to the feathers; auriculars hair brown; otherwise about as in the male. (The female is not known to assume the full male plumage, as has been intimated by certain authors).

Young (juvenile dress) similar to the adult female, but duller, more brownish above, the markings coarser, the head-pattern merely indicated, and the throat dull buffy, clouded with dusky across the middle.

Measurements.—Male (thirteen specimens): wing, 97–109 (average, 101); tail, 56–69 (64); bill, 11.5–14 (13); tarsus, 27–30 (29). Female (eleven specimens): wing, 93–107 (101); tail, 58–70 (63); bill, 12–13 (12.5); tarsus, 26–30 (28).

Range.—Western Venezuela (States of Falcon and Lara) and outlying islands of Aruba and Curaçao, Dutch West Indies, west to the Goajira Peninsula, Colombia.

Remarks.—This species was the first of the group to receive a binomial name, having been designated *Tetrao cristatus* by

Linnæus in 1766. His name was based primarily upon Brisson's "Caille Hupée du Mexique," the description and plate of which are not quite clear, but apparently indicate the species under consideration rather than *E. sonnini*. Brisson, it is true, quotes "Guiana and Mexico" as the source of his specimens, which he says had been sent to the museum of the Abbé Aubry. He cites also several previous authors, including Barrere and Hernandez. We have already shown that the Barrere citation belongs to *E. sonnini*, while it is practically certain that the "Quauhtzonecolin" of the latter author refers to the bird now known as *Philortyx fasciatus*, as I am informed by Mr. E. W. Nelson. But, as suggested by Dr. Hartert, it is quite as likely that the Abbe Aubry's Museum had got its specimens from Curaçao as from Guiana, and in any case we are probably justified in accepting Brisson's description as the sole basis of Linnæus' name, leaving all earlier authors entirely out of consideration.

Great uncertainty seems to have prevailed for many years with regard to the true habitat of this species. Some authors gave it "Mexico," doubtless on the authority of Hernandez, who is wrongfully quoted by Brisson and others to this effect, while others more vaguely gave it as "South America." Even as late as 1850, when Gould brought out his great work on the Odontophorinæ, he was unable to assign any more definite locality than "Mexico," although it is evident that numerous specimens were then extant. Indeed, it was not until 1892 that von Berlepsch secured an authentic specimen from the island of Curaçao, in the Dutch West Indies. While clearly distinguishing his specimen from the Guiana form, he suggested that the *E. cristatus* of Linnæus (*ex* Brisson) was probably the same as the latter, and he therefore proposed for the Curaçao bird the provisional name of *Eupsychortyx gouldi*. But I agree with Dr. Hartert, who found the bird on Curaçao and Aruba in the summer of 1892, that Linnæus' name is better applied to the form under consideration. Aside from von Berlepsch's proposed name, the species had already received two other synonyms, *Ortyx temminckii*, proposed by Stephens in 1819, and *Ortyx neoxenus*, applied by Vigors in 1830 to living examples in the collection of the Zoological Society of London, and which (according to Gould) turned out to be female individuals of the

present form. It is doubtful, however, if the bird figured by Audubon from the "northwest coast of America" really belongs here,

Up to 1911 the typical form was not certainly known to occur on the adjoining mainland, although in the meantime Dr. von Madarasz had described a race from the Andes of Merida. In that year, however, a small series was received by both the Field and the Carnegie Museums from sundry localities in northwestern Venezuela. Mr. Cory presently described his series from the Rio Aurare (opposite Maracaibo) as a new subspecies, but I must confess that with his type series and other specimens before me I am unable to separate them satisfactorily from Curaçao birds, all the characters assigned proving too inconstant. In 1914 the receipt of specimens from Rio Hacha, Colombia, by the Carnegie Museum extended the range of the species to include the Goajira Peninsula. The Rio Hacha birds, however, show apparent signs of an influx of *leucopogon* blood. The males have rather more amber brown feathers in the superciliaries than is usual with *cristatus*, while the females have the buffy color of the under parts paler, and the markings of the throat tending to streaks rather than squamations.

In all probability the continental range of this form includes all the low region (Tropical Zone) in the vicinity of Maracaibo Lake and Gulf, in the pocket formed by the Andes of Venezuela and the Eastern Andes of Colombia. As already shown, it extends westward along the coast to approximate the range of *E. leucopogon*, and there is a possibility that it may also meet the range of *E. sonnini* to the eastward. Concerning its habits, as observed by him in the Dutch West Indies, Dr. Hartert writes as follows:

"This pretty bird is not rare in Aruba and Curaçao, but is not found everywhere. The natives call it 'Socklé,' a name derived from its note, which is uttered very frequently. It is much esteemed as food, and sometimes sold in the market alive.

"This bird is not easy to obtain in any great numbers without a dog, as it does not care to fly and is difficult to be seen in grassy places. It is not found on Bonaire."

Specimens examined.—Venezuela: Tocuyo, 5; Guarico, 1; Rio Aurare, 4. Colombia: Rio Hacha, 6. Dutch West Indies: Savonet, Curaçao, 6; Curaçao, 7. Total, 29.

***Eupsychortyx cristatus horvathi* von Madarasz.**

Eupsychortyx horvathi VON MADARASZ, Ann. Mus. Hungarici, III, 1904, 116, pl. 12 (Pedregosa, Venezuela; orig. descr.; type in coll. Budapest Mus.).—BRABOURNE and CHUBB, Birds S. Am., I, 1912, 13 (ref. orig. descr.; range).

Subspecific characters.—Similar to *Eupsychortyx cristatus cristatus*, but back and wings with much less rufescent tinge, and shaft-stripes on sides and flanks darker and less uniform. Female differing conspicuously in having a streaked or spotted throat.

Measurements.—Male (one specimen): wing, 98; tail, 62; bill, 12· tarsus, 31. Female (two specimens): wing, 98–101; tail, 63–66; bill, 11–13; tarsus, 30–31.

Range.—Andes of Merida, Venezuela.

Remarks.—This form was described and figured by Dr. von Madarasz from two male examples forwarded to the Hungarian National Museum by the well-known collectors, S. Briceño Gabaldón e hijos. It was said to differ in its thicker and larger bill, and also in having the forehead, crown, and throat pure white, without any tinge of fawn color, while the lower throat and the sides are more sharply outlined and brightly colored. It is true that in the single male before me the crest and throat are rather purer white than in typical *cristatus*, but I doubt if this distinction would hold in a series. The other characters assigned are certainly of no value, notwithstanding which the general coloration of the upper parts is decidedly more grayish, less rufescent, and the female is so different in the markings of the throat that there can be little question as to the propriety of recognizing the form as subspecifically distinct. It appears to be restricted to the Subtropical Zone of the Andes of Merida.

Specimens examined.—Venezuela: Valle (2000 m.), 1; Pedregosa (2000 m.), 1; Milla (1630 m.), 1. Total, 3.

Carnegie Museum, Pittsburgh, Pa.

EXPLANATION OF PLATE V.

Figure 1.—*Eupsychortyx sonnini sonnini*, normal phase. No. 46646, Collection Carnegie Museum, male, El Trompillo, Carabobo, Venezuela.

Figure 2.—*Eupsychortyx sonnini sonnini*, black-throated phase. No. 78389, Collection American Museum of Natural History, Maripa, Rio Caura, Venezuela.

Figure 3.—*Eupsychortyx sonnini mocquersyi*, white-throated phase. No. 39162, Field Museum of Natural History, Margarita Island, Venezuela.

Figure 4.—*Eupsychortyx leucopogon leucopogon*. No. 147784, Collection U. S. National Museum, Panama.

Figure 5.—*Eupsychortyx leucopogon leucotis*. No. 17535, Collection M. A. Carriker, Jr. (in Philadelphia Academy of Natural Sciences), Aguachica, Magdalena River, Colombia.

Figure 6.—*Eupsychortyx leucopogon decoratus*, type. No. 51975, Collection Carnegie Museum, Calamar, Bolivar, Colombia.

Figure 7.—*Eupsychortyx leucopogon littoralis*, type. No. 38151, Collection Carnegie Museum, Mamatoco, Colombia.

Figure 8.—*Eupsychortyx cristatus cristatus*. No. 44090, Collection Field Museum of Natural History, Rio Aurare, Venezuela.



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1. View in narrow southern portion of Lake Burford. Broad-leaved cottonwood (*Populus wislizeni*) at left.

2. Shore of Lake Burford south of Chama Rod and Gun Club Cabin showing fringing growth of tules and sage grown knolls.

OBSERVATIONS ON THE HABITS OF BIRDS AT LAKE
BURFORD, NEW MEXICO.

BY ALEXANDER WETMORE.

Plates VII-IX

INTRODUCTION

Lake Burford, the largest natural body of water found in New Mexico, is situated in the Jicarilla (Apache) Indian Reservation in the northwestern part of the state. This lake for many years was known as Stinking Lake and is so shown on most maps, a name derived from the Spanish appellation, of "La Laguna Grande Hedionda" (so called from a spring of sulphur-tainted water near the western side). Recently the lake has been given much prominence as a possible breeding ground for water birds by various interested agencies and it was decided that it would be fitting to give it a more euphonious name. On May 3, 1918, therefore, by petition of the Southwestern Geographic Society and the New Mexico Game Protective association, it was rechristened Lake Burford, in honor of the late Miles W. Burford of Silver City, New Mexico, a gentleman who had been prominent as a pioneer in promoting the cause of game protection in the state.

The work on which the following notes are based was carried on in the interest of the Biological Survey, United States Department of Agriculture, and covered the period from May 23 to June 19, 1918. Through the kindness of Mr. H. L. Hall and Mr. C. McCadden of Chama, New Mexico, permission was received to occupy an adobe cabin at the lake, belonging to the Chama Rod and Gun Club, while Mr. P. G. Orell rendered aid in assembling needed camp equipment. I reached Chama on the afternoon of May 22, and left for Lake Burford at noon the following day after outfitting for a month's work in the field. Jimmy Barnett of Chama accompanied me as assistant in camp. The trip to the lake, made in a Ford auto truck, required four hours, a sufficient commentary on the state of the mountain roads, as the distance travelled was only about forty miles. Visits were made to a lumber camp at El Vado for mail and supplies on May 31 and June 12, and we returned to

Chama on June 19. Our stay at the lake extended over a period of four weeks.

PHYSICAL FEATURES

Lake Burford is located approximately at 7000 feet above sea level and lies in a trough or depression extending north and south near the summit of the Continental Divide. The lake covers an irregular basin surrounded by rolling knolls, that around most of the shore come down directly to the water. These are strewn with loose fragments of sandstone and overgrown with sage. In several places rocky promontories of yellowish white sandstone rise abruptly from the water's edge. Near these the lake bottom is hard and firm; elsewhere it is composed of soft black mud that is deep and treacherous. The shoreline in 1918 was between 15 and 17 miles in all, and the water surface extended over between 4 and 5 square miles. The northern end of the lake is broad and open, while the southern part is cut by projecting promontories into several small bays (Plate VII, fig 1). In the southern area are three small islands. The depth of the lake in the center varied from 6 to 9 feet. Lake Burford receives its water supply from snow water and rain, and to some extent from springs. In extremely high water it may overflow from a narrow east bay down a great cleft in the sandstone rock known as La Puerta Grande, that leads down toward the Chama (or Brazos) River, but within modern times the water content of the lake has not reached such a level. There is, however, an underground flow here that feeds two small lakes below the large one, and seepage continues on below these.

The waters of Lake Burford are distinctly alkaline, though the alkali is not concentrated, so that sheep, cattle and horses water here without trouble. Where low flats bordered the shore a thin alkaline scale or efflorescence formed on the surface of the mud, and isolated pools in such areas were found to be strongly saline. There was a decided difference in appearance in the water of the northern and southern parts of the lake. That in the broad, open northern portion was gray, murky and opaque, so that objects four inches below the surface were barely visible. The water in the southern end was clearer and contained less sediment, so that bottom might be seen at a depth of three feet. This difference

may be due in part to the presence of springs in the southern end (though none were located) and in part to the fact that the wind sweeps strongly across the open north end, so that the waves usually run high every afternoon and evening, a condition that would tend to keep the water roily.

The spring of 1918, had been very dry and the fall of snow during the previous winter below normal, so that at the time of my work the lake level was two and one half to three feet below that of last year. The water area varies greatly as the seasons change from year to year, and I was told that in the past ten years the water once had been down between 4 and 5 feet below its present level. During the spring months there is said to be a running stream in a small draw that reaches the lake on the northeastern side near the cabin (Plate VIII, fig. 2), but in 1918 this was dry. In some places Mexican sheep herders secured water for drinking from seep holes dug a few feet from the lake shore, but this was found to be too strong to be good, and for our use we carried water from some slightly alkaline pools located below a grove of large cottonwoods in the draw mentioned above. Later this seepage water became too bad, and further search revealed a small spring of good water four hundred yards above the cottonwoods.

The two small lakes formed by seepage from Lake Burford were about a mile and a half below the main lake. The first of these had an area of about 40 acres and was grown with *Scirpus occidentalis*. The second, known to the Mexicans as La Laguna de la Puerta, or La Laguna Thompson (named for Mr. Thompson of Chama, who formerly lived nearby), was a third of a mile long and an eighth of a mile broad. There was also a small lake 500 yards long by 100 yards broad situated northeast of the cabin, cut off by low knolls from Lake Burford, that was known as Hayden's or Clear Lake. Water birds of several species flew back and forth to these smaller lakes regularly.

It was said that Lake Burford was usually frozen over by the first of December, though ice formed along the shores earlier, and that the water was open again by the first of March. It was difficult, however, in the short time spent at Chama, to secure accurate information on this point as the lake has been remote from travelled paths and few have come here save in summer and fall. With-

in a short period Largo and Tapacitos Canyons to the west have been colonized and many more white people have come into this area. El Vado is the present railroad point from which these settlers receive supplies, and as the road to El Vado passes the lake, the region is becoming more frequented.

Conditions at the lake are such that spring is late and it was curious that when I arrived the season was farther advanced on the high pine covered slopes than lower down along the shore. From May 24 to June 5 the average morning temperature at 6:00 A. M. was about 40° F., while on May 26 and 27 ice was found in the rushes bordering the beaches. After June 5th it became warmer. Heavy winds from the west prevailed during May, but moderated later. At the time of my arrival black willows were beginning to bloom in protected places, and in a few spots along the lake shore small broad-leaved and narrow-leaved cottonwoods were in bud. Gray willows did not blossom until June 17th. By June 6th vegetation showed slight increase as growth, retarded by the cold nights, was slow. The breeding season for marsh birds (save the passerines) did not begin until about May 25 and was not at its height until June 10, while Eared Grebes had just begun their nest-building on June 18.

The work at Lake Burford was undertaken primarily to ascertain what species of water birds bred there and in approximately what numbers these occurred. Comparatively little collecting was done, as it was desired to disturb the birds as little as possible, but long hours each day were spent in observation, aided where necessary by the use of 8-power binoculars. The natural conditions at the lake were such as to render observation of the avian inhabitants a comparatively simple matter. A stand of dead tules remaining from last year bordered much of the shoreline, and the broken clumps of these rushes were just high enough to form a natural blind wherever I cared to sit down and watch. When observation at long distance was necessary other cover was available in the sagebrush on the knolls above. Most of the birds that occurred here were very tame and it was the ordinary thing to have them carry on the business of every day life, with no sign of fear or uneasiness, within 30 to 100 feet of me as I lay concealed in the rushes.

GENERAL CONDITIONS

The water of Lake Burford, while not bad, was at the same time distinctly alkaline as has been previously stated, so that the aquatic and semiaquatic vegetation was limited to those forms of plant life characterized by a marked tolerance for alkali. The round-stemmed bulrush or tule (*Scirpus occidentalis*) was the most prominent of these. Considerable areas along the south, west and north shores were entirely bare and open but elsewhere this plant formed a growth in the water, extending from the shoreline out for a distance of from one to fifty feet. In general it grew as a fringing band from six to ten feet broad (Plate VII, fig. 2). The dead stems of this tule formed dense masses, matted firmly by the winter's snow and ice, to be penetrated and traversed only with much trouble, a safe cover for many nests as the ducks were able to creep in underneath the interlaced stems and here conceal their eggs. On May 24 the new growth was just starting and much of it had been frost-bitten so that the tips showed as brown dead spikes. Two weeks later the new growth was extensive and formed an efficient cover (Plate VIII, fig. 1). New clumps were appearing in shallow open water also where all last year's growth had been destroyed by ice so that by the first of July the area covered by this plant must have been extensive.

Bayonet grass or three-square (*Scirpus paludosus*) was common and salt grass (*Distichlis spicata*) was abundant in suitable places along the shore where it grew with foxtail (*Hordeum jubatum*). Sage brush (*Artemisia tridentata*) covered all of the knolls and rolling slopes, in most places coming down to the beach. A linear leaved pondweed (*Potamogeton pectinatus*) was the most abundant of the truly aquatic plants and with it, clogging and enveloping its leaves, were great masses of a green alga. On May 23, when work was begun at the lake, the pondweed was appearing as scattered filaments on the floors of sheltered bays. As the water became warmer this growth increased and by June 18, it had begun to appear in large areas at the surface. By July 1, it must have covered practically the entire lake. Ditch-grass (*Ruppia occidentalis*) was found in the Laguna de la Puerta and a musk-grass (*Chara* sp.) was common in the spring holes from which we

secured drinking water. The cat-tail (*Typha latifolia*) was fairly common. A black and a gray willow grew at intervals along the lake shore, and both narrow-leaved and broad-leaved cottonwoods (*Populus angustifolia* and *P. wislizeni*) were found in small numbers (Plate IX, fig. 1). At a few points wild currant (*Ribes inebrians* and *R. aureum*), choke cherry (*Padus melanocarpa*) and service-berry (*Amelanchier*) were abundant in the hills and came down above the shore of the lake on protected north slopes. The yellow pine (*Pinus brachyptera*) grew in open forests over the higher hills (Plate IX, fig. 2) interspersed with pinyons and cedars which came down over the lower slopes. Douglas fir was found in some of the gulches and there were many groves of a small oak in valleys in the hills.

There were no fish of any species in the lake. The axolotl (*Ambystoma*) was abundant and was the source of food of mergansers and herons. The Mexican name of this curious creature was in common use, but was usually corrupted by Americans to "water loty." These creatures were observed lying on aquatic growth a foot or so beneath the surface, basking in the sun's rays, and at my approach turned with a quick wriggle and disappeared in the murky water below. In feeding on Chironomids resting on the surface film, these water dogs broke at the surface as fish might, and at such times seemed surprisingly active for creatures ordinarily considered so sluggish. During June they began to die in considerable numbers for no apparent reason (save perhaps that they had lived their allotted span of life) and were found floating on the surface or washed up along the shore. For a period the Night-Herons, acting as scavengers, disposed of them as they appeared, but later so many of the bodies were present that an effluvia arose from them in early morning, after the air had lain quiet over the surface of the lake during the night.

Along low marshy shores frogs (*Rana pipiens*) were fairly common while in spring holes back of the lake these were abundant.

Among mammals coyotes were fairly common, signs of an occasional badger, wild cat or skunk were found, porcupines were seen in the hills and deer were fairly common. The track of a wolf was observed on one occasion.

GENERAL DISCUSSION

Though a fair number of breeding individuals of various ducks inhabit Lake Burford in summer, it seems from observation, that in addition many drakes come there to molt and spend the summer after their duties of reproduction are completed. Males of the Cinnamon Teal, Mallard and Redhead were the first of these to appear, and, though not present at the time of my departure in large numbers, still it seemed that they were steadily increasing in abundance. A drake Cinnamon Teal, in company with a male Mallard, shot on May 27, had evidently finished breeding as the plumage was worn, the penis and cloaca reduced in size and the testes shrinking. On the following day six drakes of this species were observed in one flock, and from then on they were fairly common. Male Mallards consorting by themselves or with other drakes appeared May 27 and 28, and were seen in small numbers until June 10, after which they were common. One that was molting into eclipse plumage was observed June 4. Drake Redheads began to separate from the females on June 3, and after June 14 were common. In the case first noted of the Mallard and Cinnamon Teal drakes there can be no doubt but that they represented birds that had bred elsewhere, possibly at a lower altitude (though of course there is no means available for proving this) and had come here afterward to molt and spend the summer. No other deduction may be drawn from the facts outlined above, as at the time at which they appeared females of the same species were just beginning to lay at Lake Burford. The presence of such unmated birds as these shows that it is unsafe to rely upon a count of all drakes in arriving at an approximately correct census of the breeding ducks of any given area.¹ It is true that breeding drakes at certain times of the day (usually between 8 and 10 in the morning) are found alone, while the female is absent at the nest depositing an egg; and these drakes usually linger near at hand for a few days after the female has ceased to lay and has begun to incubate. (This statement may be qualified by adding that it is more often

¹The statements outlined here do not apply to the Ruddy Duck (*Erismatura jamaicensis*) as the drake of that species, like the male Canada goose, usually remains true to his spouse during incubation and the rearing of the young.

true of the "deep water" than of the "shallow water" ducks). These breeding birds however after a little experience may be told readily by their actions and demeanor, and seldom need be confused with those others whose duties of procreation are for this season completed. The mated birds when found alone are not far from the site of the nest, are more alert and watchful at the approach of an intruder, and often call a warning to the female. When flushed they may fly only a short distance and then drop into the water again, and in any case usually circle around and seem loth to leave the neighborhood. In contrast to this the summering drake nearly always seeks the company of others of similar status, so that little bands of these birds, often containing several species, may be found standing about on shore sleeping, preening or feeding. In demeanor these birds are more sluggish and when flushed usually fly off to some safe spot often a considerable distance away. Their entire manner and custom of life is wholly different from that of the bird still in company with his mate.

At Lake Burford these summering male ducks increased steadily in numbers until the time of my departure. Certain points and open beaches were favorite resorts with them, and there I was sure to find little flocks of males alone, or in company with a few pairs of mated birds. By the time when these birds must of necessity lead a sequestered life because of their inability to fly through the molt of their flight feathers, the two prime requisites of food supply and shelter would be present, as cover on the waters of the lake in the form of growths of the two species of *Scirpus* was steadily increasing while the great masses of potamogetons promised abundant food for them.

The lateness of the breeding season among the waterfowl here may be attributed perhaps to the slow development of a proper food supply. Until the first of June food suitable for these birds was far from common in the waters of the lake. A number of Mallards, and a few Cinnamon Teal and Lesser Scaup Ducks that I shot for examination for one reason or another were all thin and poor, and had very little fatty tissue underlying the skin. A female Ruddy Duck was the only individual examined that was fat in any degree. It is possible that this poor physical condition might retard physiologically the sexual maturity of these birds



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1. Growths of tules furnishing shelter for water birds. (Lake Burford, N. M.)
2. Water hole in gully near cabin at Lake Burford.

and so postpone the breeding season until a period of comparative abundance had been reached. It would seem that this scant store of energy must tell heavily on the females who were under the necessity of drawing upon their reserves of strength in producing a number of eggs. The close of the breeding season finding the birds thus reduced brings another call upon their vitality, in the renewal of their covering of feathers. It was observed that female Mallards were renewing their body feathers at the same time that they were mating and laying eggs.

The occurrence of the Lesser Scaup Duck at Lake Burford was of especial interest as, though the birds were present in fair numbers they were not breeding. These ducks were observed first on May 25, when a few apparently were mated. The mating display was observed on several days, and the birds were seen in copulation occasionally during the first week in June. Two pairs that were under observation frequented one area of rushes and the females gave the usual alarm note when I came in sight. Careful search failed to reveal a nest and finally I shot both females, one on June 17, and the second on June 18. Dissection showed that while the ovaries in these two were apparently healthy, as they were clear and normal in color, there was no physiological development in ovary or oviduct, and careful examination showed that the birds had not laid this year nor would they have done so if unmolested. The reason that these ducks remain so far south is puzzling. In many cases such ducks are cripples as I have taken summering birds at such southern localities as Lake Koshkonong, Wisconsin, Minco, Oklahoma, and the Laguna de Guánica, Porto Rico, at the end of the month of May and during the first part of June and have found that they showed the scars of old wounds. Here at Lake Burford, however, the birds were present in fair numbers, and were able to fly without difficulty when approached, and the two females collected showed no sign of injury of any kind. The males observed were all in full handsome plumage. It may be suggested that part at least of these ducks do not breed until they are two years old, and that some of these may remain in southern localities, lacking the physiological incentive for the flight to the breeding ground in the north.

An interesting case of sterility in a female duck was encountered in collecting a small series of Mallards, to be preserved as speci-

mens. On June 15 I had a pair of Mallards under observation for some time and from their actions was certain that they were mated as the female remained constantly near the male and the two had all of the mannerisms of mated birds. A short time after I came nearer and finally shot them both. On dissecting the female I found that the ovary showed little or no development while the ova exhibited the diseased condition known as black atrophy, an affection that is little understood, but one that is known to render birds sterile. The oviduct in this Mallard could be barely distinguished and showed no development whatever, though in healthy breeding females taken at this same time the oviduct was greatly enlarged, and exhibited the condition of turgidity common to the breeding and laying season. The male that accompanied this female was molting rapidly into eclipse and had already lost much of the breeding plumage. On examining the sexual organs in this bird I found the cloacal portion still swollen and enlarged, but the testicular substance degenerating so that it had been resorbed to a point where the testes were shrunken to one-fourth of the full normal size.

The instances outlined here are a further example of the care necessary in allotting ducks as breeding in certain localities simply because of their presence there in breeding season. This would apply especially to more unusual records in extension of range. Further observations on the occurrence of mated sterile females among ducks and other birds are of importance and the question is one that will repay careful investigation.

MIGRATION

At the time of my arrival there was still some movement in migration both among the smaller insect-feeding passeriform species and the larger water birds. Cliff swallows were not observed until May 25, Western Warbling Vireos arrived about May 31, and Orange-crowned Warblers, June 2. Grinnell's Waterthrush was seen on May 23 and 25, and the Pileolated Warbler on May 26 and June 2.

A few observations seem to indicate that Lake Burford is on one of the lines of flight for birds passing to and from the Salt Lake Valley, Utah. Snowy Herons observed at the lake at intervals

from May 23 to June 5, were certainly on their way to the mouth of Bear River, Utah, as that is the only breeding colony of these birds in the interior in this general region. A flock of Franklin's Gulls in full breeding plumage frequented the lake from June 14 to 16, and it may be that these were in passage to the same place as the time of their departure coincided with the arrival of a part of the breeding birds on Bear River; while apparently there is no intermediate region where they may nest. It may be supposed therefore that part of the ducks that come to Lake Burford in the fall come down from the Salt Lake Valley and use this lake as a resting place before passing on farther south. It is probable that this lake is merely one point in a broad line of flight that covers western New Mexico and the most of Arizona wherever water is found.

ANNOTATED LIST OF BIRDS

1. ***Colymbus nigricollis californicus*** (Heermann). EARED GREBE. The Eared Grebe was the most abundant of the breeding marsh birds at Lake Burford and while the species was common when work was first begun at the lake it increased suddenly in abundance between May 30 and June 1. Many of these Grebes were seen in pairs on my arrival, but until June 2, small flocks containing unmated birds of both sexes were found in certain of the open bays. As the season advanced these birds showed more activity, and after June 5, the Grebes were always found in pairs, that rested on the water with male and female never separated far from one another. Many were seen in the open water, some near shore and others farther out, while other pairs frequented the shelter of the fringing tules. All were tame and showed little fear so that when I remained quiet I had no difficulty in watching them, often at a distance of only twenty or thirty feet. They were without question the most interesting birds on the lake and were continually revealing new habits and mannerisms so that the watcher was certain to be repaid for any time spent in observing them. The displays witnessed during their mating were perhaps of the greatest interest.

The most striking of these courtship displays was one similar to that styled the "Penguin" attitude by Julian Huxley in his studies of similar actions in the Great Crested Grebe of Europe.¹ I was fortunate in witnessing this daily in whole or in part during my stay at Lake Burford. At the beginning of this, one of the most characteristic acts in the courtship of the Eared Grebe, the two birds, male and female, usually rested on the water five or six feet apart. Suddenly the male assumed an attitude fac-

¹Proc. Zool. Soc. London, 1914, pp. 491-562, 2 plates.

ing the female with crest and cheeks flaring, head erect, neck extended slightly forward, wings half opened with the tips raised so as to display all of the handsome markings to the best advantage. The female then dived, remaining under twelve or fifteen seconds, while the male maintained his position watching intently. As the female emerged she came up slowly a few feet away with head and neck extended until when free of the water she was standing bolt upright on the surface, treading water rapidly, with her whole body exposed. Sometimes she came up facing the male, sometimes with her back toward him and sometimes behind him. On perceiving her he rose at once, assuming the same attitude as that held by his mate, and the two, still bolt upright, advanced slowly toward one another, until finally their breasts touched, when their feet, suddenly moving more rapidly, broke at the surface, making a great boiling in the water. This performance was accompanied by constantly varied trilling and whistling notes. The birds held this upright position for a few seconds with heads turning rapidly from side to side as if pivoted on the neck, then sank slowly down to the usual resting position on the water, and at once began to preen the feathers of the sides of the breast and neck. This ended the display and the birds drifted slowly apart. The performance as described was the completed act. Frequently however after birds has been paired for some time they rested on the water facing each other, then rose at once to the upright position, and touched breasts, while calling excitedly, after which they sank back and began to preen. The boiling, rushing sound made by their feet as their breasts touched could be heard for a long way and often attracted attention to pairs in the open water at some distance that were just completing this display. Sometimes the male continued erect after the female sank back, and might then turn his back to her and travel off across the water for two or three feet. Again the male at times rose in display and the female did not respond when he sank back slowly after a few seconds. In one variation of the action I saw a male emerge very slowly in front of his mate with wings partly raised, submerge, and then rise again. The third time he emerged in the erect position but she did not respond when he sank back again on the water. The entire display was seen at comparatively long intervals but the simplified version in which the two birds merely rose together was observed many times each day. The entire act required from 10 seconds to nearly a minute to complete. As the birds stand bolt erect their resemblance to small penguins while performing this act is both curious and striking.

Another very pretty display was as follows. A pair rested on the water 8 or 10 feet apart and then swam slowly toward one another, suddenly checking to a standstill when their bills almost touched. They remained for a second or two in this position and then both turned half around so that their tails were almost touching, and the birds were facing away from one another. The male then depressed his crest, lowered his head and nodded it slowly back and forth, looking at the surface before him as though

examining a nest and eggs, while both gave a low trilling note that continued for some time and was very pleasing. As the season advanced this action became more and more common, and when nest-building began the male performed in this way over the nest foundation constantly. The female now became more active, frequently rising half erect at short intervals, arching her neck with head bent toward the breast and then giving a sudden quick spring forward, seemingly imitating the action of sliding up on a nest platform.

In another action male and female rose from the water, and, standing half erect with the male slightly behind but with his breast touching the female's side, rushed off across the surface for six or eight feet calling excitedly. At other times a pair lay prostrate and travelled off on the water with necks extended and wings spread and flapping. Or males alone rose on the surface and with neck bent forward, crest and cheeks expanded, and flapping wings, ran along in a straight line or in a semicircle sometimes for a hundred feet. I thought also that part of the love making of these birds took place beneath the surface of the water as mated pairs often dived together and remained below for some time. It was a common thing for a male to follow a female under as she dived and at times males showed attention to females by diving from a few feet away and coming up immediately beside them.

Rival males often threatened one another by half extending their wings and then closing them for two or three times as they faced one another, or ran at each other striking with their bills. The attacked bird in this case usually dived to escape. In their squabbles they seemed often to endeavor to strike the feet of an opponent, apparently a tender place, as the attacked bird always dived. Occasionally I saw one spring clear from the water at another to land on his back and slide off. Females too fought to some extent when their mates paid attention to others, and struck vigorously with their bills, doing more real fighting than did the males, who often merely blustered and seldom really came to blows as the one attacked usually dived avoiding a direct encounter. Preening the sides and breast was a constant accompaniment of any mating display.

On cold, sharp mornings, when the temperature was near freezing, these grebes frequented sheltered bays away from the wind, and floated about on the surface with their backs to the rising sun, the feathers of back and flanks expanded, the wing tips raised, and the whole plumage fluffed to receive the warm rays to the fullest degree. At these times the birds looked as large as Mallards or Gadwall. The sudden change to the usual slim form just before the birds dived was almost startling. Frequently when at rest the birds drew one foot up among the flank feathers, and floated about paddling slowly with the other. Often they stretched after resting, extending first one foot and then the other straight back and free of the water. I saw them feeding by swimming slowly along with neck outstretched, seizing Chironomids floating on the surface film with quick

jabs of their sharp bills. Often as the grebes neared these flies they gave a quick stroke with the feet in order to drive ahead and seize them before they were disturbed by the wave that preceded the bird when swimming at a regular rate.

Though these grebes were paired early, actual nest-building did not start until about June 13, though a few females were seen in Hayden's Lake playing with nesting material as early as the first of June. Nests were begun where the water was from three to five feet deep. The females seemed to do the work of nest construction, dragging up masses of algae to a central point and diving actively for more while the males remained near the nest posturing over it trilling and reaching out as though to aid the female as she approached with building material. A colony of a dozen or fifteen nests was begun at one point in the lower end of the lake, and the grebes were noisy and demonstrative here for several days before actual building begun, displaying constantly and fighting with rivals. The noise and commotion continued as nest construction was started. No completed nests were found nor were any eggs laid up to the time of my departure.

The notes of these grebes were whistled and somewhat varied but were of such a nature that it is difficult to transcribe them successfully to paper. Males were heard occasionally making a curious sougling sound concerning whose origin I was uncertain. Occasionally during the night, especially when the weather was stormy the Grebes called in chorus making a considerable volume of wild sound that carried for a long distance.

After the first of June, when insect life became more abundant, little parties containing from six to fifteen of these grebes came swimming up from the lower bays toward dusk each evening to feed in the great open expanse of water at the northern end of the lake. These bands swam steadily ahead in close formation toward the open water, without stopping to rest. Little flocks travelling a hundred yards or so apart continued to come until it was dark. Occasionally as they passed a single grebe came out from the rushes on either side to join them. Frequently I counted 150 or 175 individuals before it became too dark to see clearly. The broad area of water mentioned proved a trap for many insects that came flying out from the sage grown hills surrounding it, while Chironomids and Ephemerids were emerging constantly from its shallow depths in great numbers. Frequently in the morning I found the water surface strewn with drowning beetles and ants, while gnats were resting everywhere on the surface forming an abundant source of food.

After leaving Lake Burford I visited a lake region at an elevation of nearly 9000 feet on a high plateau in the southern end of the Chuska Mountains. The Eared Grebe was found here also and was nesting in fair numbers on the two lakes known to the Navajos as Be-e-khet-hum-ñez and To-teh-khih. Though these lie at two thousand feet greater elevation than Lake Burford breeding among the grebes was much farther advanced.

On July 1, I examined a colony of about forty nests and found that the young had hatched in about two-thirds of them while the eggs in the remainder were heavily incubated. The nests were grouped in a growth of *Scirpus occidentalis* from twenty to thirty feet apart. They were the usual rounded masses of decaying vegetation built up two inches above the water with a slight hollow in the top to contain the eggs. Some had been partly covered by aquatic vegetation drawn up by the parent birds before leaving, while in others the eggs lay in the open with no attempt at concealment. Apparently the young leave the nest as soon as hatched as though I found broken eggshells in which the membranes were not yet dry, the young were nowhere to be seen. Adult grebes swam ahead of me through the water plants, diving when I came too near, but not seeming greatly alarmed. Often they were accompanied by young ten or twelve days old that swam close behind, almost touching the body of the adult bird or climbed upon the back of the parent to be held beneath the wings while the old bird swam away. Adults were seen feeding these young, calling them up across the water and placing food in their bills. These juvenile birds had a wrinkled space of thickened reddish skin bare of feathers on top of the head.

2. **Podilymbus podiceps** (Linnaeus). PIED-BILLED GREBE.—This species was common at Lake Burford and was breeding. Though part of these birds were pairing when I first arrived some were nesting already and all bred earlier than did the Eared Grebes. Their actions were no less interesting than those of the preceding species but these grebes were somewhat more difficult to watch. Each male had selected a restricted area as his own and though he made excursions occasionally out into the open lake, was usually to be found near one certain place. Usually this was a small opening in the rushes fifteen or twenty feet across, often with a slender line of tules projecting in a point that separated a little inner bay from the open water. Ordinarily the male was found in the slight protection of the slender tules or in the open a short distance outside while his mate lay hidden somewhere within. These birds were continually on the alert and watched every move on the marsh, swimming slowly or resting quietly, always with their short tails pointing up at an angle of 45 degrees to display the white below prominently. They were the only marsh birds of whom the male coots seemed to be afraid, and it was seldom that a coot ventured to attack one, though pugnacious to an extreme toward most other swimming birds, a respect that was well warranted as the grebes were aggressive and savage. These male grebes called at short intervals, listening to others at a distance and frequently answering them. Their notes were loud and sonorous, and in calm weather could be heard plainly across the water for half a mile but could be modulated and controlled also so that though the birds were only a few yards away the sounds seemed to come from a great distance. The most common note was a loud *coh coh coh coh coh coh cow cow cow cow*, the first series of notes increasing

in rapidity as they progressed and the last given more slowly with equal intervals between them. This was varied to *coo-coo-coo-coo-qua*, *coo-coo-qua*, *coo-coo-qua* continued for some time, the *qua* note being prolonged and with a curious rising inflection. These calls often were given while the bird was in the open. The head and neck were held erect in calling and as each note was uttered the bill was thrown up. Another note given usually from the shelter of the rushes was a loud laughing *hah hah hah hah hah hah*, that was harsh and raucous to an extreme. In addition to the calls described above they occasionally uttered a peculiar low whistled note.

The mating displays of this species while not as varied as those of the Eared Grebe were strange and interesting. A pair resting quietly in open water sometimes dived and then came up to splatter off for a hundred feet or so, across the surface with flapping wings with the male in pursuit of the female and about ten feet behind. At the close of this the male gave a series of loud sonorous calls. Frequently he nipped off a length of tule stem twelve or fifteen inches long, holding it by one end in his bill, while he swam about or even dived. Again a pair swam toward one another with heads and necks held erect. When about a foot apart they stopped and then swung half around and presented their tails to one another. At the same time the male held his wing tips slightly raised, the feathers of his back elevated and the sides of his neck puffed out while both birds turned the head alertly from side to side, though seemingly they regarded some distant object rather than each other. In a second or two they swung back, facing one another again, continued this turning half around and then back, as though pivoted in one spot, at ten or fifteen second intervals for nearly ten minutes. The male was more regular in turning than the female and she was frequently out of time with him. Finally the female lowered her head while the male continued to display for a few seconds longer, after which the two swam back into the shelter of the rushes.

When at rest these birds spent much time in preening and when feathers were loosened in this process (as many were) they were seized, dabbled in the water and swallowed. Eared Grebes did the same but often tried to shake the feathers free from their bills, usually not swallowing them unless they adhered, though I saw one Eared Grebe discard a feather which was immediately picked up and swallowed by its mate.

The Pied-billed Grebes like the preceding species sunned themselves by resting in sheltered bays with their feathers fluffed out. In doing this they floated with their backs to the sun with the wing tips and feathers well elevated to catch the warming rays so that at a distance they looked very large and bulky.

On June 18, I found a brood of newly hatched young near the lower island in the south lake. As I approached the rushes bordering the shore a female Grebe swam out calling *cuh kow cuh cuh cuh* and at intervals, rising threateningly on the water, made a great boiling noise by treading



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1. Grove of narrow-leaved Cottonwoods (*Populus angustifolia*) near Lake Burford.
2. Mouth of gulch above Lake Burford showing Yellow Pines (*Pinus brachyptera*).

rapidly with her feet. After a few minutes four young swam out from the shelter of the rushes and joined her, calling with loud whistled notes. She swam slowly away followed by the young who one by one succeeded in clambering onto her back beneath her wing feathers so that soon she was carrying all four. She did not seem to realize this however as several times she rose and shook herself throwing them all into the water again, when they climbed back as rapidly as possible. Finally she dived once carrying the young with her, and then again, leaving them on the surface. The young were able to swim rapidly with the head extended and the base of the neck and forepart of the body entirely submerged in the prostrate attitude common to young grebes. They dived when pursued, and swam away under water, or hanging suspended five or six inches below the surface, watched me intently. One or two soon became tired, and, attracted by the moving boat, swam over and attempted to clamber up the side. One in diving became entangled in algae and had to rise to the surface where it remained helpless. All were able to stay beneath the water for considerable periods but were captured without difficulty. On land they progressed by a series of leaps made with both feet together and wings extended, at each jump falling forward on the breast. The female disappeared after leaving her young, while the male remained in the rushes calling at intervals while I examined them.

These grebes at times were very pugnacious toward the smaller Eared Grebes, driving them about and diving to bite at their feet. At times they were seen in pursuit of Coots and Ruddy Ducks.

3. **Larus delawarensis** Ord. RING-BILLED GULL. Immature gulls of this species were seen on May 24 and 30, and June 5, 6, 7, 14 and 17. One or two were probably present on the western side of the lake during the entire period as the birds were seen there on the occasion of every visit. There was no indication that they were breeding or intending to breed.

4. **Larus franklini** Richardson. FRANKLIN'S GULL.—Fairly common in migration. Two adult birds in full plumage were seen on the western shore of the lake on June 6. On the morning of June 11, fifteen or twenty were scattered about at daylight, resting on the lake in front of the cabin. All were in immature plumage but were molting into adult dress. One was taken. On June 13, about twenty more were circling about low over the water so that at first they were taken for terns. On the following day a flock numbering thirty or more in full adult plumage appeared and remained until June 16. They were wild and would not permit near approach. In the evenings they spent much time in aerial evolutions that were beautiful to watch. They worked upward in spirals, alternately flapping and soaring, maintaining a close formation until suddenly all set their wings and rushed downward for several hundred feet making a great roaring noise. Rising again they often separated into three or four smaller flocks that alternately joined and separated,

continuing these antics until dark. Another immature bird was taken on June 15.

5. **Hydrochelidon nigra surinamensis** (Gmelin). AMERICAN BLACK TERN.—Three were seen on June 6, apparently in migration.

6. **Pelecanus erythrorhynchos** Gmelin. AMERICAN WHITE PELICAN, A few were found in migration. Two were observed on May 26, two on May 27, and four on May 28, all resting on shore. It is possible that these birds were on their way north into the Salt Lake Valley. There is no food for them at Lake Burford save the abundant water-dogs (*Ambystoma* sp.).

7. **Mergus americanus** Cassin. AMERICAN MERGANSER.—Found at Lake Burford during migration. A small flock was seen on May 27, and fourteen pairs were observed on May 30. These remained in open water and were very wild. On June 3, four males and two females were found. They flew and left the lake immediately when I came in sight though a long distance away. On June 10, twenty-five males all in full plumage came in, flying in a great V, circled over the lake, and then passed on. An adult male was flushed from the shore on June 15. There are no fish in the lake so that these birds must come here for water-dogs (*Ambystoma* sp.).

8. **Anas platyrhynchos** Linnaeus. MALLARD.—The Mallard was one of the most common species of ducks breeding at Lake Burford and I estimated that forty pairs were preparing to nest here this season. These ducks shifted about from place to place more than any others on the lake, and were seen flying morning and evening. Towards night they came in to feed where openings in the rushes allowed them to reach the shore, where they secured food that had been washed in by the waves. At daylight nearly every morning I found a pair feeding in the spring hole where we secured our water supply. About eight in the morning the birds came out on little open beaches and remained until towards noon, preening, sleeping and resting in the sun.

Mallards are undemonstrative birds and, though they were under observation during much of the time that I was out, it was seldom that I saw any sign of mating display among them. This species has a mating flight, similar to that of the Gadwall, in which two males and one female rise in the air together and fly along rather slowly with the female flying beside first one and then the other of the males. In turn these swing in ahead of her and setting their wings throw up their heads and display their back and wing markings. During this performance the males call constantly while the female quacks at intervals. The whole lacks the dash and speed of the display of the Gadwall and the birds do not change direction so frequently, pursuing a more even course. In another action the female came out on shore and walked about in the short grass with head extended quacking loudly, perhaps simulating a search for a nest site. Sometimes the male accompanied her and sometimes he remained standing quietly on shore.

From their actions I believed that some of the females were laying on May 29. A female that was just beginning to lay was taken on June 7, and birds that had deposited several eggs were shot on June 8, 13, 14 and 15. One taken June 14, had the breast nearly denuded of down. A mated female that was sterile was taken on June 15. While females were at the nest the males remained from a hundred yards to a half mile away standing on shore or swimming in the open water. These males were alert and called instantly at the approach of danger. On one occasion I shot a female for preservation as a specimen as she rose from the border of the lake and her mate came over and swam up and down out of range for several minutes calling anxiously.

As early as May 29, drakes that had finished breeding were banding together and it would seem that they must have bred elsewhere. Following that date these males were found daily, alone or in small flocks, and their number was augmented steadily by others. They were usually found resting or sleeping on shore in open places in company with drakes of other species. A bird that was molting into eclipse was noted on June 4, and from then on birds in changing plumage were common. In this molt they become dull in color first about the head and at the same time lose the recurled upper tail coverts. A male almost entirely in eclipse plumage was seen on June 18.

On June 18, I saw a Mallard's egg that had been stolen apparently by pack-rats (*Neotoma*) as it was found on a small island where there was no other sign of predatory animals. The contents of this egg had been neatly extracted through a hole at one end and the shell laid in a low growth of *Chrysothamnus* with small flat bits of sandstone placed around and over it nearly concealing it. It might seem that this was the work of boys save that the egg was found on an island inaccessible save by boat, and the only boat on the lake was in my possession.

The female Mallards taken were nearly all molting the body plumage and the new feathers that were coming in were very dark. These birds differed from northern and eastern Mallards in the color of the bill also. This was in general dull greenish slate with the base of the maxilla dull orange while the tip of the bill often inclined to dull plumbeous. The naked inter-ramal space was tinged with orange. In one or two there was a dusky blotch on the culmen, but I examined none with the prominent blackish spots on the orange at the base of the bill so prominent in females of this species elsewhere. The toes and tarsi were dull orange. The bill of these females in a way resembled that of the males but was duller in color.

(On May 25 a large very dark-colored duck in company with a mated pair of Mallards passed me several times at close range. It had white bars on either side of the speculum and was much darker in color than the female Mallard, resembling a Black Duck markedly. It is possible that this was a female mallard, but it seemed to have a clear olive green bill

and was larger, thus resembling a male of the Black Duck group (possibly *A. diazi*). No other ducks of this type were observed).

9. ***Chaulelasmus streperus*** (Linnaeus). GADWALL.—The Gadwall was the most common of the shallow water ducks at Lake Burford, outnumbering the Mallards, as it was estimated that about 60 pairs were breeding there. The birds were all in pairs at the time of my arrival but appeared to nest late as males continued with the females until the time of my departure. They shifted about more or less during the day but in general were distributed all along the lake shore. On one occasion fifty flushed in a flock from a shallow open bay and for a few seconds all were in confusion. At once, however, the flock began to divide, and before they had gone 150 yards all had separated out in pairs and flew off in that manner.

The mating flight of the Gadwall is always interesting and is seen constantly when the birds are on their breeding grounds. Here at Lake Burford opportunities for observing it were excellent. The flight was usually performed by two males and one female. In beginning two males approached a female in the water, calling and bowing. She usually rose at once and flew with a slow flapping flight, mounting in the air with the males in pursuit, calling and whistling constantly. First one and then the other of the males swung in front of her, set his wings, inclined his body upward to show his handsome markings, and, after a few seconds, dropped back again to his former position. Late in the season there was always one of the males who was favored and who displayed more often than the other, flying close to the female, so that in passing his wings often struck hers, making a rattling noise. After a short time the second male often left the pair and returned to the water. The birds frequently mounted until they were 300 yards or more in the air, and darted quickly from side to side, flying now rapidly and now slowly. When the flight was over the birds descended swiftly to the water again. I was never able to ascertain whether there were some extra males about or not, as, though, there were usually two with the female in this flight I found them at other times always in pairs.

The female Gadwall, like the mallards, also came out in the short grass of the shore and walked about with head down, quacking loudly, an action that I took for part of the mating display.

When the birds were in the shelter of the rushes they went through other mating actions of interest. The male swam toward the female bowing by extending his neck until the head was erect and then retracting it, bringing his bill down onto his breast. He then approached pressing his breast against the sides of the female and shoving her easily, first on one side and then on the other, biting her back and rump gently as he did so. After a few seconds she lowered her body in the water and copulation took place with the female entirely submerged save for the crown of her head while half of the body of the male was under water. As the female emerged the male turned immediately to face her and bowed deeply, giving a deep reedy call as he did so.

Gadwall fed in the water by tipping, or occasionally came out on shore to walk along and skim the surface of the mud with their bills as do Green-winged Teal. Like the Mallards they usually spent the morning in resting and sleeping in the sun on some open point.

The call note of the female is a loud quack that is similar to that of the female Mallard but is pitched slightly higher and is not quite so loud and raucous. Considerable experience is required however to distinguish with certainty the calls of the two birds. The male has a loud call like *Kack Kack*, a deep reedlike note resembling the syllable *whack*, and a shrill whistled call.

Females were laying as early as May 29, but no nests were discovered.

10. **Mareca americana** (Gmelin). BALDPATE.—There were two pairs of Wigeon that were apparently nesting at Lake Burford and single males were seen occasionally. The birds were tame and often allowed a close approach.

The mating flight of this duck resembles that of the preceding species, but is performed with more dash and speed. The birds fly swiftly and erratically. The males dart ahead of the females, setting and decurving their wings and throwing their heads up, exhibiting their striking markings to the best advantage. The female calls *qua-awk, qua-awk* and the males whistle *whew whew* constantly during this performance. Occasionally as a pair swung in low over the water the male darted ahead and, with decurved wings and head thrown up, scaled down to the surface. Two males and a single female invariably took part in the display flight which began as in the Gadwall by the males approaching the female, bowing and whistling and then following her as she rose in the air.

The birds were observed swimming in open water or feeding in shallow bays by tipping to reach the bottom. They were seen with other ducks sunning themselves on open points in the mornings.

11. **Nettion carolinense** (Gmelin). GREEN-WINGED TEAL.—Five pairs of Green-winged Teal were found at Lake Burford. These birds were found resting on shore with other ducks or feeding by walking about on mud bars like great sandpipers skimming with their bills over the surface. The call note of the males is a musical whistled note resembling *pheep* to an imitation of which they responded readily. The females call *quack, ka-ack, quack* in rather a high tone. Female birds were apparently laying as they were seen in areas of heavy dead grass and rushes; and called anxiously when I examined these, but no nests were found.

A few drakes that apparently had nested elsewhere appeared on June 14, and from then on they accompanied flocks of males of other species of similar habit, resting with them on open beaches and sandy points.

12. **Querquedula discors** (Linnaeus). BLUE-WINGED TEAL.—A pair of these teal was seen on May 25, and another on June 3. About June 15 they became slightly more common and it was estimated that four pairs were breeding here. Single males appeared on June 11, and

others on June 14, after which they were found regularly in company with other drakes. On June 14 one fed for some time on the open shore in front of a blind where I was concealed. This bird walked along working eagerly in the mud with its bill with all of the mannerisms of the Cinnamon Teal. The call note of the male Blue-wing is a high-pitched *tseef tseef tseef*, entirely different from the notes of the other male teal with which I am familiar.

13. **Querquedula cyanoptera** (Vieillot). CINNAMON TEAL.—The Cinnamon Teal was common at Lake Burford. One pair frequented a marshy area near my boat landing and was seen in the rushes, or resting on shore, constantly through the day. On one occasion two of these Teal were trying to feed along a rush grown shore where a male Coot had taken his stand, but he drove at them savagely time after time whenever they came near, forcing them to take wing and fly a few feet to evade him.

A single drake of this species that was shot on May 27, when in company with a male mallard, had evidently bred this year, and after that date summering males were fairly common. It was supposed that they had bred at a lower altitude and had come up here to spend the summer, as resident birds at Lake Burford were just beginning to lay. On June 6 toward dusk one flock of six males of this species, and later a second flock of seven, came in to the lake high in air, circled about, and alighted in the water. Apparently they had just arrived from a distance.

These single males persisted in paying attention to females already mated, much to the disgust of the paired drakes, who drove them away, bowing at them and chattering angrily. On one occasion six were seen making demonstration toward one female who paid no attention to them, but followed her mate. He swam first at one and then another after each chase returning to his mate and bowing rapidly, while occasionally she bowed to him in return. After a few minutes another mated pair of teal flew by and four of the males flew off in pursuit of them, leaving the first male only two to combat.

The only note that I have ever heard from the male Cinnamon Teal is a low rattling, chattering note that can be heard only for a short distance.

14. **Spatula clypeata** (Linnaeus). SHOVELLER.—The Shoveller was fairly common at Lake Burford and fifteen pairs apparently nested here. On May 27, about forty pairs were feeding on the small lake known as Hayden's Lake but these birds were thought to be in migration as they disappeared at once. On the large lake, Spoonbills were found in shallow bays, in which the shore was open or with only scattered rush growth, where they fed by submerging the head and working through the mud at the bottom.

Males bowed to their mates, in the same way as do the Cinnamon Teal, by extending the neck straight up and then retracting it with the bill held slightly above horizontal. At the same time they often give a low rattling note like *chu-uck chu-uck*. The females usually responded by bowing,

but in a less exaggerated manner, simply jerking the head up and down. The whistling noise that accompanies the start in flight with these birds is made apparently as they gain momentum by beating the sharply pointed wings rapidly after their first spring from the water.

15. **Marila americana** (Eyton). REDHEAD.—The Redhead was a common breeding bird at Lake Burford and 30 pairs were located that seemed settled for the summer. These birds were found mainly in the small bays in the southern part of the Lake where they swam in the open water or rested and slept on shore. Small flocks were seen standing on the open beaches about sandy points every morning sunning themselves or preening their feathers. It was interesting to note that, while the shallow water ducks paid no attention to me unless I came near, the Redheads always waddled into the water and swam out into the open as soon as I appeared even though I might be half a mile away.

The peculiar mating display of these birds seen on several occasions was observed to advantage on June 4. A party of four males and three females were swimming in open water, two of the birds apparently being mated. Suddenly one of the females began to display, approaching one of the males with her head held high, sometimes jerking it up and down and again holding it erect, and at intervals calling *quek que-e-ek*, the last a peculiar rattling note. The male chosen extended his neck, holding his head erect, frequently whirling quickly to show the female his back, or again sank down with his head drawn in while the female bowed before him. At short intervals she opened her mouth and bit at him gently or, if he was swimming, sprang quickly in front of him with her head erect and back partly submerged. She transferred her attentions from one male to another in turn, even approaching the one who apparently was mated. The males showed considerable jealousy over these favors and drove each other about in fierce rushes. At intervals they called, the note being a curious drawn out groaning call, resembling the syllables *whee ough* given in a high tone. As it was given the male sometimes raised his breast, elevated his head and erected his crest. Again he threw his head straight back so that it touched his dorsum above the rump, with the throat up and the bill pointing toward the tail. The bill was then thrown up and head brought again to the erect position as the call was made. The curious actions of the male in calling continued after he was mated, and the strange call note was heard often. Mated males were seen driving savagely at their mates and biting at them while they escaped by diving.

On June 4, a nest containing eight eggs was found in a mass of dead *Scirpus* stems in a clump of tules below the cabin. On June 13 this nest contained 14 eggs and the female had added a considerable amount of down to it. The mate of this bird remained in the open water from a hundred yards to a quarter of a mile from the nest-site but was never seen to go near the nest. The female, who left the nest whenever she heard my boat approaching, always flew out to join him. He remained with her

until June 17, and then disappeared as she had been incubating steadily for three or four days. The nest in this case was built entirely of dead *Scirpus* stems and was deep and well protected. Fluffs of down adhered to the tules all about it so that the site was easily located.

Four single males were observed on June 6, and a flock of twelve was seen on June 8. After this males unaccompanied by females were common. Part were birds that had nested here and a part I believed came from elsewhere.

16. **Marila valisineria** (Wilson). CANVAS-BACK.—There were three pairs of Canvas-backs on the lake that from their actions seemed settled for the summer, but I was unable to find their nests. During the first two days of my stay a female frequented a small cove below the cabin acting as though she was nesting in the rushes but as she was constantly disturbed she finally left this part of the lake. On June 8, a female was seen swimming low in the water away from the rushes but in this case also I was unable to locate a nest.

On one occasion a female swimming after a male, quacked like a female Redhead but in a more subdued flattened tone. The males were silent. On May 27 while watching birds from a shore blind a male Canvas-back came around a point within 40 feet of me. He saw me and eyed me closely but did not seem at all afraid, and swam on past, at intervals dipping the tip of his bill in the water. A few minutes later as I stood up he rose and flew rather heavily, paddling with his feet for about 80 yards before being able to clear the surface entirely. Three pairs of these birds were flushed from a resting place on a rocky beach on June 15.

17. **Marila affinis** (Eyton). LESSER SCAUP DUCK.—There were ten or twelve pairs of bluebills and a few unmated males on Lake Burford during the entire time of my stay but none apparently were nesting. On June 1, I found 25 males and 23 females on Hayden's Lake, a part of them in pairs. These had evidently stopped here in migration as they passed on at once and were not seen again. The summering birds were found in the open bays and in the forenoon were often seen resting and sleeping on shore at open points. Like the Redheads they swam out to open water as soon as I came in sight even though I was a considerable distance away.

The birds were seen in display on several occasions and as in the case of the Redheads the more active part in this fell to the lot of the female. Parts of the mating actions were witnessed on a number of occasions while on June 3 the complete display was seen. A pair rested in open water in front of me when suddenly the female began to swim back and forth with the head erect, frequently jerking the tip of her bill up while the male drew his head in on his breast and lowered his crest, giving his crown a curious flattened appearance. The female turned alternately toward and away from the male, sometimes biting gently at him, while occasionally he responded by nipping at her with open mouth. At short intervals she dove

towards him, barely sliding under his breast, and emerged at once only a few feet away, or at times advanced toward him brushing against him and then turning away. A second male that tried to approach was driven away by quick rushes though the female paid no attention to him. She continued her diving and finally at intervals the male began to dive with her, both emerging at once. As the display continued he joined her under the water more and more frequently and finally both remained below the surface for over thirty seconds where copulation apparently took place. When they emerged the female swam away for a short distance with the male following her. Frequently during these displays the female gave a peculiar rattling, purring call like *kwuh-h-h-h* while the males whistled in a low tone.

The female bluebills seemed very anxious when they happened to spy my head in the rushes, and swam back and forth with heads erect and crests raised giving their peculiar calls. The males were more stolid and paid little attention beyond taking care to keep out of gun range. Several pairs were found about certain favorable places for nesting, and I was certain for a time that they were going to breed, a supposition fostered by the displays that I saw continually among them. Careful search however failed to show nests and when finally on June 17 and 18, I shot females that were paired and apparently nesting in points of rushes, I found that, though in normal physical condition, they had not deposited eggs, and, as the sexual organs were not developed, would not have done so this year. As this has been treated fully in the introductory portion of this report it will not be discussed further here save to state that the bluebill apparently should not be listed among the breeding birds of Lake Burford at present, though it seems possible that occasionally pairs may nest there.

Some of the unmated drakes exhibited great regularity in habit. Two in particular were found every morning resting near a certain clump of grass on one sandy point. All of the males observed were in full plumage.

18. ***Erismatura jamaicensis*** (Gmelin). RUDDY DUCK.—This duck was one of the most common at Lake Burford and it was estimated that 55 pairs were breeding at the lake. When I first arrived part of these birds had selected the areas where they were to spend the summer and were already mated. Others were found in little parties composed of both sexes in places where the rushes were too thin in growth to afford nesting cover, but by June 1, with the increase in growth of the rushes, Ruddy Ducks were distributed around the lake and seemed to be settled for the summer. From observations made here it would seem that part of these birds at least paired and mated after reaching their breeding grounds. Apparently in some areas there were more females than males.

The curious display of the males was seen every day and was observed to the best possible advantage, as frequently birds displayed within 30 feet of me. They seemed to keep up the curious performance constantly

all day long and sometimes displayed for half an hour or more when no females were near. As a matter of fact this action often began whenever I drove the males to open water from the shelter of the rushes. the manner of procedure was as follows. The male rested on the water with tail erect at an angle of 80 degrees. The head was then drawn in and jerked rapidly up and down several times with the bill depressed, so that the tip of the bill struck the side of the breast above the tracheal air sac¹ (present in the male alone) producing a curious clicking sound. The bill tip was gradually lowered until at the last it hit the breast feathers at the water line splashing the water into foam. At the same time the tail was drawn steadily forward past the vertical to an angle of 60 degrees on the opposite side of the arc, so that the tip came within one and one half or two inches of the head. At the close of this action the head was suddenly extended with the mouth open, and the bird emitted a low croak. The tail was then thrown back to the usual position and the bird resumed its normal attitude. In addition during the display the feathers of the crown were elevated at the sides and depressed in the center to form a deep V that was broad in front and more narrow behind. Sometimes birds held the crest thus elevated constantly, and again it was thrown into this form only as the last notes were given, when it was flattened immediately to the normal position. The sounds produced during the display may be represented by the syllables *tick-tick-tick-tickety quek*. The first series is not vocal but is produced by the bill striking the breast above the swollen air-sac, so that this sac is apparently used as a tympanum, a use which explains its development as a secondary sexual character in the male. The last note is vocal and is made up of two distinct elements or sounds uttered synchronously. One of these is a harsh frog-like note that may be represented by the syllable *quok* and the second is slightly drawn out, almost two-syllabled, with a reedy quality resembling the note of the male Gadwall. It was thought that this second note was made in the normal way by the syrinx, and that the first was caused by the expulsion of air from the tracheal sac, as a contraction of the dermal muscle known as the *cucullaris* above the sac was plainly evident through movement of the skin of the neck as the duck extended his head and made this last sound. As this note was given the tips of the wings were elevated for two inches or more, so that it seemed possible that the carpal joint of the wings pressing against the sac (which occupies the whole front of the neck above the breast) aided in expelling air from it.

Males were seen constantly swimming after the females, checking to give the display, and then continuing on. At a distance they resembled absurd little manikins with quick jerky motions controlled by the pulling of strings. At short intervals the males extended their heads on the sur-

¹cf. Wetmore, A., Proc. U. S. Nat. Mus. Vol. 52, 1917, p. 479; and Condor, Vol. XX, 1918, p. 19.

face and flapping their wings made a quick drive forward for three or four feet making a great boiling in the water with wings and feet. Immediately they resumed the erect position and began the display again. Females were rather shy and when pursued too closely escaped by diving.

Males exhibited considerable jealousy and lowering their tails continually drove at one another, the attacked bird usually diving to escape. Occasionally however he stood his ground when the oncoming male either checked and retreated, or occasionally sprang from the water striking on his opponent's head or back with his broad feet and then sliding off. Often the two remained close together striking at one another with their big feet. This was about the extent of their fighting, at which I was somewhat surprised as young birds when two thirds grown are very pugnacious when handled.

By June 5, a considerable number of Ruddy Ducks were in pairs and swam about when driven from the rushes with the male displaying and the female following him. Females then sometimes gave a curious imitation of the display of their mates, swimming with tails in the air, jerking their heads up and down and then extending the open bill, either without making a sound or at most uttering only a falsetto *qua-er*. This odd mimicry was given at times by females that apparently were unmated. At times some of these female ducks produced quite a rattling noise by striking the tip of the bill on the breast, a sound however that was entirely different from that produced by the male. Males were seen in company with several females as late as June 8. After June 10 the amount of energy spent in display lessened somewhat.

Females were often rather nervous over my presence in the rushes and swam back and forth calling *whap* or *quep* in a curious flat tone. Another note heard from them was *Keow Keow* in a high tone, a one-syllabled call somewhat similar to that of a hen turkey. The breeding season with these birds apparently is late as a female shot on June 18 was not yet laying though the ova were enlarging and the oviduct was about half developed. No nests of this species had been begun at the time of my departure.

These birds in preening the feathers of breast and abdomen stood erect in the water treading rapidly with the feet while they did so. Bluebills and other deep water ducks usually lie over on the back or side in order to dress the feathers of the underparts.

U. S. Biological Survey, Washington, D. C.

(To be Concluded)

ADDITIONS TO THE AVIFAUNA OF THE PRIBILOF
ISLANDS, ALASKA, INCLUDING FOUR SPECIES NEW
TO NORTH AMERICA.

BY G. DALLAS HANNA.

THE Pribilof Islands are perhaps more favorably situated for intensive biological study than any other place in our Arctic possessions. They lie near the center of Bering Sea where there is a very prolific development of marine life. They are the home of the famous Alaska fur seal and the seat of extensive Government establishments for the care of the skins of these animals. Good facilities exist for field collecting in almost all branches of biology and much detailed study might be done with the equipment and laboratories that are maintained there.

Ornithology is especially interesting in the region because of the enormous numbers of sea birds. Various employees of the Government have given the subject more or less attention and several large collections have been made. Whenever even a comparatively small amount of collecting has been done, some unusual visitors have been discovered. The permanent bird population, comprising breeders and regular migrants, numbers but 35 species, of which 21 have been found nesting, while the migrants and accidental stragglers which have been secured or observed have swelled the list to 129 species, including those reported in this paper. Of this number specimens have been collected of all excepting 6, and the U. S. National Museum contains specimens of all which have been collected excepting one. The stragglers come from all directions, at all seasons, and it appears that the end of the list may not be reached until practically all of the avifauna of Northwestern America and Northeastern Asia shall have been recorded. No less than 13 new records for North America have been made here. Some remarkable and unexpected visitors have landed, such as the northern flicker, Japanese cuckoo, Japanese haw finch, Kamchatkan pine grosbeak, brambling, and Kamchatkan sea eagle.

¹This list was first given before the Biological Society of Washington and a short review containing the names of the additions was published in the Journal of the Washington Academy of Sciences, Vol. IX, No. 6. (cf. Auk 1919, p. 443.)

No less remarkable is the absence of some expected species such as the northern raven, a common bird on islands both north and south of these.

It seems most probable that these rare visitors have been lost birds. They seem to have been blown from their regular courses of flight and upon finding the Pribilofs, have landed there at the particular time when some one was prepared to secure the record. It is very probable that many of them would have perished had they not found this land, and the list may be taken as an indication of the great numbers of birds which must be lost at sea. And if the number of species which has been secured bears any relation to the total number which has actually visited the islands then it seems certain that a few years of intensive ornithological study would result in the addition of many more records. This is true because it must be admitted that the unusual species thus far secured have been obtained largely through accident. William Palmer spent the summer of 1890 in collecting birds, but otherwise no one has devoted more than a very small fraction of his time and energy to this work.

I have spent six summers and four winters on the Islands and my last visit extended from June, 1916, to September, 1918. During this period 22 new records for the Islands have been made from specimens collected, five of which represent birds which had not hitherto been reported within the boundaries of North America. One of the latter, the Kamchatkan pine grosbeak, was secured by Mr. A. H. Proctor on St. George Island and has already been recorded.¹ The remaining 21 species are listed below.

In addition to the specimens which represent new records several other very interesting species were collected or observed which seem to deserve mention. Two specimens of the ivory gull and one of Ross's gull were secured on St. George Island. An ancient murrelet and a Savannah sparrow were taken on St. Paul Island for what appears to be the first time although they had been previously reported. A European widgeon, a pomarine jaeger, and a wheatear were taken on the latter island. They had previously been collected but once. Two specimens of the dark

¹Riley, J. H., *Auk*, Vol. 34, p. 210, April, 1917.

phase of Rodger's fulmar were preserved. These birds are often seen in the large colonies which breed on the Pribilofs. They seem to mate indiscriminately with light colored birds and in one case a slate-colored downy young was seen which had light colored parents. It does not seem likely that the colonies consist of more than one species. A little wren succeeded in getting from St. George to St. Paul Island in 1914. The species was completely exterminated at the former place during the winter of 1916-17 by gyrfalcons. Another probably from Otter Island was found during the summer of 1918.

In the identification of the specimens and the correcting of names I have received much assistance from H. C. Oberholser, C. W. Richmond, E. A. Preble, and J. H. Riley, to all of whom I wish to express my grateful appreciation.

NEW RECORDS FOR NORTH AMERICA AND THE PRIBILOF ISLANDS.

Eunetta falcata (Georgi). FALCATED TEAL.—A male of this beautiful crested teal was secured on St. George Island, April 18, 1917. Its gorgeous coloration was admired by all who saw it. The native hunters there do not readily distinguish the several species of ducks and this was called by them "Mallard," which name is applied to at least eight separate kinds.

Heteroscelus brevipes (Vieillot). POLYNESIAN TATTLER.—The history of the Polynesian Tattler in North America dates back to October 4, 1911, when a female was secured on St. Paul Island by Mr. M. C. Marsh, then the naturalist of the fur-seal service. The specimen was placed in the National Museum collection without being detected as differing from the wandering tattler. It was discovered by Dr. H. C. Oberholser while he was verifying the identification of a second specimen of the same species, a female collected on St. Paul Island, September 2, 1917, by the writer. Owing to the difficulty of distinguishing the tattlers it may be that the Asiatic form comes across Bering Sea more frequently than the records would indicate.

Thalassoaetus pelagicus (Pallas). KAMCHATKAN SEA EAGLE.—A bird of this species was shot and wounded on St. Paul Island, December 15, 1917, but fell into the sea. Five days later it was picked up on the beach in badly decomposed condition. Enough of the specimen could be saved however to enable the identification to be made in the National Museum. The species has been reported from the Aleutian Islands before, but the record was not accepted by the American Ornithologists' Union because specimens were not secured to make the identification positive. Eagles have been seen on the Pribilofs several times but they probably in most cases belong to the species which Palmer has recorded

(Fur Seals and Fur Seal Islands of the North Pacific Ocean, Pt. 3, 418, 1898) the Northern Bald Eagle, which is abundant on the Aleutian Islands, 200 miles south.

Anthus spinoletta japonicus Temminck and Schlegel. JAPANESE PIPIT.—A female Japanese Pipit was secured on St. Paul Island on August 29, 1916. I have found that pipits are regular fall migrants at the Islands but heretofore all those collected have been the common North American subspecies, *Anthus spinoletta rubescens*. If a large series were secured it is possible other forms might often be found.

SPECIES NEW TO THE PRIBILOF ISLANDS ONLY.

Brachyramphus marmoratus (Gmelin). MARBLED MURRELET.—A Marbled Murrelet was collected at St. Paul Island, January 13, 1918. It was a very unexpected visitor. The ancient murrelet was recorded from the Islands about 50 years ago and had not been subsequently observed. It was the one which was naturally looked for because it is a common bird in Bering Sea. It was a great surprise therefore that the form which lives south of the Aleutian Islands should be found at the Pribilofs in mid-winter. Later, April 18, 1918, a specimen of *Synthliboramphus antiquus* was secured.

Puffinus tenuirostris (Temminck). SLENDER-BILLED SHEARWATER. A female Slender-billed Shearwater was picked up on the beach of St. Paul Island on June 4, 1918. Another bird was seen shortly after, flying about two miles out at sea. Mr. C. E. Crompton told me that numerous individuals were seen in the vicinity of St. George Island at about the same time.

Chen hyperborea hyperborea (Pallas). LESSER SNOW GOOSE.—A male was secured on St. Paul Island, September 16, 1916. Ordinarily natives are prohibited from using firearms on the Pribilofs during the time when the fur seals are there but on that day a man telephoned to the village from North East Point, twelve miles distant, that there was some kind of a large white bird in a pond near by. Thinking perhaps a swan was seen and knowing the desirability of specimens in order to determine if any Asiatic species visit the Islands he was instructed to shoot the bird and bring it in. But this snow goose is what he brought. Another bird was killed the following year on the same island but since it belonged clearly to the same species and time did not permit of its preparation it was not preserved.

Branta canadensis hutchinsii (Richardson). HUTCHIN'S GOOSE.—A female of this subspecies was shot and preserved on St. Paul Island, May 12, 1918. It is considerably larger than the cackling goose which ordinarily come to the islands each spring and fall, and unlike the latter form there is no sharp demarcation in the coloration of the under parts.

Arctonetta fischeri Brandt. SPECTACLED EIDER.—Three female Spectacled Eiders were secured at St. Paul Island on January 13, 1918, by

native hunters. They did not recognize them as belonging to a separate species from the pacific and king eiders with which they were associated, and since the natives must be depended upon by the collector to a large extent for sea ducks it is likely the birds come more frequently than has been suspected. It would seem natural for individuals to pass in the vicinity of the Pribilofs each year because they have been reported in winter as far south as the Aleutian Islands. One of the birds collected was preserved in formalin for anatomical study.

Melanitta deglandi dixon (Brooks). WESTERN WHITE-WINGED SCOTER.—Four specimens of the Western White-winged Scoter have been taken on the Pribilofs during the last three years. All were females but this was merely an accidental circumstance because males have been seen. The first specimen was secured on October 30, 1916, at St. George Island by the writer. The next was taken on November 15, 1916, at the same island by Dr. H. P. Adams, formerly physician of the U. S. Bureau of Fisheries. Another was secured at St. George Island on February 4, 1917, and one at St. Paul Island, February 8, 1918, both by the writer.

The species is of regular occurrence about the islands in winter. It has been seen on several occasions before any specimens were secured but was not recorded because positive specific identification could not be made. The natives recognize the bird as belonging to a different species from the eiders with which it comes and associates. The birds feed along shore just outside of the surf line in small flocks. The white speculum of the wing makes them excellent targets for the man with the shot gun out after fresh meat in the dim light of the arctic winter morning.

Aristonetta valisineria (Wilson). CANVAS-BACK.—A beautiful male Canvas-back was taken on St. George Island on May 18, 1917. The Pochard, which is difficult for the average hunter to distinguish from this, has been taken on the island but once so both species must be considered as rare visitors. However the natives are inclined to call all ducks "Mallards," when the females have a general resemblance to that species and the males are brightly colored. Thus Pin-tails, Buffle-heads, Golden-eyes, and other river ducks are very apt to be reported as Mallards unless the collector makes a personal examination of each bird secured. Probably the inability to identify the ducks has prevented the securing of many desirable specimens here in the past and delayed the reporting of others until recently.

Clangula clangula americana Bonaparte. AMERICAN GOLDEN-EYE. Two specimens which clearly belong to this subspecies were collected; a male on St. George Island, May 6, 1917; and a female on St. Paul Island January 31, 1918. From a study of female specimens collected in the fall of 1913, it is certain that there is a mingling of the European and American forms in the vicinity of the Pribilofs.

Nettion crecca (Linnaeus). EUROPEAN TEAL.—With the capture of a male and female European Teal on St. Paul Island, May 4, 1918, a per-

plexing question regarding the avifauna was settled. The American teal was recorded in 1898 but no specimens were collected. Subsequently it was found that the European form was frequently found in the Aleutian Islands and it was a question whether the bird seen on St. George by William Palmer in 1890 had not been this. Further complications entered into the case in 1914, when Mr. Edward A. Preble and I collected a female and her unfledged young on St. Paul Island. They could not be identified as the one or the other species. But on May 10, 1917, a fine male of the American form was secured on St. George Island. Then when the European was found we knew definitely that both species migrate through the islands. But until some way is found to distinguish the females of the two forms it will not be known which one stopped on St. Paul to nest in 1914.

Haematopus bachmanii Audubon. BLACK OYSTER-CATCHER.—An adult male of this strange bird was shot on the beach of St. George Island, January 12, 1917. Why it should have come up here in the middle of the winter cannot be stated; it is another instance of the peculiar movements of birds in this region. Other species have done the same thing. The Aleutian Sandpiper goes north regularly in the winter and has been secured on the Islands several times. Once it was found on the drift ice. The Aleutian Song Sparrow came to St. George in the winter of 1913-14. It is possible that these birds arrived in the fall and had remained until they were secured later in the year but it hardly seems possible that so striking a form as *Haematopus* would have escaped detection by sharp native eyes for very long.

There is good reason to suspect that this species has been shot on St. George Island before. One native told me he had given a bird like it to a Doctor Mills several years earlier but that it had spoiled before being prepared as a specimen.

Numenius tahitiensis (Gmelin). BRISTLE-THIGHED CURLEW.—A female bristle-thighed curlew was taken on St. George Island, May 26, 1917.

Although the Eskimo Curlew has been collected on the Pribilofs and the Hudsonian has been reported as having been seen this is the first bird of the genus which has come to my notice during my residence there. It is not likely that either species visits the place except as it may accidentally get out of its regular line of flight.

Archibuteo lagopus sancti-johannis (Gmelin). AMERICAN ROUGH-LEGGED HAWK.—One specimen, unsexed, was secured on St. George Island in the fall of 1917, by Mr. C. E. Crompton of the U. S. Bureau of Fisheries. He has kindly consented to the record being included in this list.

Large hawks are particularly difficult to secure in the arctic tundra country because of the absence of cover for stalking. They have been seen several different times on the Pribilofs, both in spring and fall, during

recent years but in every case they were flying high and of course could not be sufficiently well identified to make a specific record of value. This specimen is the first positive evidence that the species occurs. It is entirely probable that several other large hawks may eventually be secured.

Petrochelidon lunifrons lunifrons (Say). CLIFF SWALLOW.—A Cliff Swallow was shot and skinned on St. Paul Island about June 10, 1918, by a native from whom the specimen was secured. This makes the second species of swallow to be collected on the Islands; the Northern Violet-green was taken in 1914. The barn swallow has also been recorded but not collected.

Plectrophenax hyperboreus Ridgway. MCKAY'S SNOW BUNTING.—Since this species is known to wander from its only breeding place, St. Matthew Island group, to the mainland of Alaska, it has been expected and searched for on the Pribilofs for several years. But it was not definitely known to come until March 30, 1918, when a male in full winter plumage was secured on St. Paul Island. It and a female, which escaped, were found on the top of Rush Hill, the highest point of the Island.

Junco hyemalis hyemalis (Linnaeus). SLATE-COLORED JUNCO.—Two female juncos were secured from a flock of six at North East Point, St. Paul Island, on September 24, 1917. They were feeding about the buildings there, apparently as contented as if they were in the midst of civilization.

Spinus pinus pinus (Wilson). PINE SISKIN.—A male Pine Siskin was secured from a flock of twelve found among the North East Point sand dunes, St. Paul Island, on September 24, 1917. The birds seemed to be perfectly satisfied to feed on the seeds of the few ground plants which grow there.

Hylocichla aliciae aliciae (Baird). GRAY-CHEEKED THRUSH.—A female Gray-cheeked Thrush was collected on St. Paul Island, September 9, 1917. It was found feeding on spaded up ground about the Naval Radio Station.

California Academy of Sciences, San Francisco, Calif.

EXTRACTS FROM NOTES MADE WHILE IN NAVAL
SERVICE

BY W T. HELMUTH

In the fall of 1917 the ship on which I served as seaman was assigned to inspection duty on the Atlantic and Gulf coasts of the United States, under Rear-admiral C. McR. Winslow's flag. We left the navy yard at Brooklyn on October 20, 1917, and proceeded up the New England coast as far as Machiasport, Maine, which we reached on November first. We then journeyed south, close inshore, up the Delaware River to Philadelphia, thence to Norfolk, Va., arriving on Thanksgiving day. We left Norfolk on February 23, 1918, proceeding south to Key West, Fla. From here we went directly to Pensacola, Fla.; from Pensacola to New Orleans, up the south pass of the Mississippi; from New Orleans to Galveston, Texas; thence to Port Arthur, Texas, and across the Gulf of Mexico to Tampa, Fla., arriving on April 1, 1918. From Tampa our course took us again to Key West, up the east coast of Florida to Jacksonville, and thence north to Charleston, S. C., stopping at Brunswick and Savannah, Ga.

During this time I had excellent opportunities to study the birds met with offshore, and a few chances to watch land birds on our all too infrequent "liberties" in various places. Some of these notes may be of interest to readers of 'The Auk,' and I append them herewith.

My very sincere thanks are due to Mr. John Treadwell Nichols, of the American Museum of Natural History, who was kind enough to read the original, and perhaps too voluminous, notes, and whose suggestions have been invaluable in the separation of the wheat from the chaff.

I

NOTES FROM NEW ENGLAND COAST NORTH OF CAPE COD, AUTUMN
OF 1917.

Across Massachusetts Bay from Provincetown to Boston, late October. Boston toward Machiasport, Me., sixty-sixty-five miles offshore, October 31; to Machiasport and Bar Harbor, in-

shore, November 1; Bar Harbor to Rockland, Me., inshore, November 2; Rockland to Portland, Me., November 4.

Colymbus a. auritus. HORNE GREBE.—In the harbor of Machiasport, November 1, there were nearly 500. [This unusual concentration may indicate that the height of southward migration had reached this point on the coast. J. T. N.]

Alle alle. DOVEKIE.—Three Dovekies seen, Oct. 31, one of which we almost cut down. The wings of these little birds move incredibly fast, and they bear a certain resemblance to tiny Old Squaws in their manner of flight. Six observed on November 1.

November 4, off the Maine coast, my brother counted 83 Dovekies during his hour on the bow look-out, and 103 from the crow's-nest in an hour. We passed through scattered flocks of them all day. They rose before the bows in little flocks, flying to either side, usually for only a short distance before either dropping down into the water again or diving from the air. They flew low over the water for the most part.

Rissa t. tridactyla. KITTIWAKE.—Several flocks of about a dozen each, seen while crossing Massachusetts Bay, late October. Abundant offshore north of Boston and inshore north of Rockland. Common along coast from Rockland to Portland. [The abundance of this species on the Maine coast at this season would seem to indicate that it first moves southward inshore and then V's somewhat outward and also scatters directly outward across the ocean. J. T. N.]

Sula bassana. GANNET.—Going north several were seen crossing Massachusetts Bay. From Boston to Maine they were common, almost all adults, which may indicate that the adults move southward first.

Phalacrocorax carbo. CORMORANT.—On October 31, when well out at sea a large, ragged-looking cormorant was seen, which I identified as *carbo*. Three more of the same species were seen on November 1, in the early morning, far offshore.

Spinus pinus. PINE SISKIN.—On November 2, between Bar Harbor and Rockland, a flock of Siskins and another of Horned Larks came aboard lighting all over the rigging. Many large flocks of Siskins noted during the day, all going north. Mr. Nichols suggests that this northward migrational movement may be accounted for by the deeply-indented, broken coast line of Maine, affording many opportunities for migrational eddies of the type so often observed in similar regions.

II.

WATERFOWL IN THE VICINITY OF DELAWARE BAY, IN LATE NOVEMBER, 1917.

November 24, 1917. At anchor in lower Delaware Bay. Red-breasted Mergansers, Old Squaws, and Scoters in myriads, especially the first-named species. The birds were for the most part flying across the sandy

dunes at Cape Henlopen, or from the bay to the sea. Certain definite pathways seemed to be used by all species, and the birds flew to and from sea indifferently. Their activity continued throughout the day. Weather raw, cold and windy, with a brisk north-west wind blowing.

November 28. From League Island Navy Yard down Delaware River, en route to Norfolk, Va. Large flocks of Mallard, Black Duck and Brant seen along Delaware River. Fifty or sixty Baldpate, a small flock of Redhead, and one flock of fifteen Pintails noticed with the above. In lower Delaware Bay, near Cape Henlopen, at least five hundred Brant were seen. About twenty-five miles to sea, off Cape Henlopen, we ran into a tremendous bed of Scoters. All three species were present, but White-winged Scoters greatly predominating. There must have been at least 20,000 individuals in the flock, which rose in a solid mass, the air being so filled with birds that I fully expected some to fly through our deadlights!

III

BOUND SOUTH, FROM NORFOLK, VA., TO KEY WEST, FLA., FEB.

24 TO 27.

Larus leucopterus. ICELAND GULL.—February 24, 1918. Passed Hatteras at noon, eight miles off Diamond Shoals lightship. Weather cold; sea smooth at Hatteras, becoming lumpy off Cape Lookout and very heavy from there on. Strong wind from south-east. At 6:30 A. M. an Iceland Gull appeared, which followed us all day to a point approximately ninety miles off Cape Fear. Its pure white appearance was striking, and the bird looked distinctly smaller than the numerous Herring Gulls. Bill proportionately smaller, yellow with a slightly cloudy spot on the lower mandible. In some vague way the flight of this bird and its general appearance was quite different from the Herring Gulls. It never associated closely with the others, hanging on the edges of the always following flocks. Occasionally it rested on the water, and we often left it far behind, but it had no trouble in overtaking us, and continued to follow us all day.

Sula bassana. GANNET.—Very common off the capes of the Carolinas, on February 24, at a distance of from fifty to eighty miles offshore, both adults and immature; less common February 25, closer inshore, approaching Savannah, Georgia; extremely abundant in flocks of considerable size fifteen miles off St. Augustine, Fla., February 26; two seen close inshore not far from Palm Beach, February 27. [A sector across the Gannet's late winter range at the conclusion of an unusually severe season. J. T. N.]

Ardea herodias. GREAT BLUE HERON.—On February 25, when about twenty miles off the coast of southern Georgia, a Great Blue Heron, very nearly exhausted, was seen flying south, inshore of us. At intervals the tired bird would try to rest on the water, but upon sinking to its thighs

would resume its weary flapping again, always keeping low near the surface. For the frequency with which this species is met with at sea, nearly always in an exhausted condition, I am inclined to blame their habit, in the south, of feeding on the actual ocean beach, and of their custom of making an extended oversea flight when startled at their fishing. Under such circumstances it would be all too easy for so large a bird—and no very powerful flyer at that—to be blown out in a strong offshore gale.

Land Birds seen at sea. February 25, approaching Savannah, Ga., a Savannah Sparrow appropriately enough, spent a few hours on the boat deck. On February 27, when about six miles offshore near Palm Beach, Fla., a Ruby-throated Hummingbird flew over us and a Yellow-throat was with us all day; it was joined later by a Yellow-Palm Warbler, and these two caused much excitement among the crew, such “tropical looking birds” impressing them with how far south we had come! The presence of the Hummingbird seemed to me unusual at the time, and it seems as though the bird really had no business to be so far north at that time of year, though, as Mr. Nichols pointed out, this species is not uncommonly met with even at long distances from land.

IV

SOME FLORIDA NOTES, MARCH, 1918.

Gavia immer. LOON. March 18, a bed of over 200 seen in the harbor of Pensacola, all swimming in a compact body in one direction,—a novel sight.

Lobipes lobatus. NORTHERN PHALAROPE. March 14, about 175–180 miles off the Gulf coast of Florida, approximately opposite Tampa. Passed eight Northern Phalaropes at noon, and three more about two hours later.

Dendroica discolor. PRAIRIE WABLER. One of the commonest birds in the mangroves on the west end of Key West, Fla. Nichols speaks of this being a common mangrove bird on the west coast of Florida in April.¹

Early migration of land birds. At Warrington, Fla., near Pensacola, March 18, the thick, low growth along the swampy shore of a small lake was alive with warblers and other small birds, some of which were surely migrants. Nichols noticed no such migration further south in the Keys in 1917, until a much later date. Among others, the following species were seen: Red-eyed Vireo, one; Black and White Warbler, one; Parula Warbler, several; Cape May Warbler, two; Myrtle, Yellow-throated, and Pine Warblers, eight or ten of each. One Wood Thrush and three Blue-gray Gnatcatchers also seen, and a small flock of Carolina Chickadees.

At Hobe Sound, on the southeast coast of Florida, this spring (1919), I observed no movement of migrating warblers, (discounting the departure of winter residents there), at all comparable to this, until the first

¹Nicholls, J. T., 1918. Bird-notes from Florida; Abstr. Linn Soc., N. Y., No. 30.

week in April; the height of general migration occurring on April 27. No general movement of winter resident species even, was observed there until March 22 (1919), at a point much further south than Pensacola.

From the above it might be supposed that the migration on the north-western corner of the peninsula begins at a much earlier date than on the east coast, or even on the peninsula proper.

V

NOTES FROM MISSISSIPPI DELTA AND GULF OF MEXICO, LATE
MARCH.

March 22, 1918. Bird life on Mississippi Delta. Sailing from a point twenty miles south of South Pass, up the river to New Orleans. When about twelve miles from the Delta we encountered huge beds of Ring-billed and Herring Gulls, chiefly the former, resting on the already turbid and muddy water. This muddy water lay like a film of oil over the clear water below, and our passage separated the film, leaving a clear, limpid wake behind, over which the Herring, Laughing, and Ring-billed Gulls fairly swarmed, as well as several Pelicans and Royal Terns. As far as we could see were banks of gulls, like patches of snow on a muddy plain, and the Pelicans in the distance were beyond all estimation. Saw many Royal Terns and about twenty smaller terns, resembling the Common Tern in general appearance, but too far away to identify.

A flock of Redheads flew over the ship, and we saw several dozen Canvasbacks, which struck me as rather remarkable. Cormorants were abundant in small flocks of from five to eight near the entrance of the river. Saw a few Bonaparte's Gulls also.

As we entered the pass a flock of at least 2000 Pelicans rose from a sandy point beyond the breakwater with a tremendous flapping of wings, and hundreds of ducks started from the reeds on all sides whenever we blew our whistle. Royal Terns were common in large flocks here, as well as in the marshes, remaining so until the character of the country changed decidedly. Brown Pelicans were everywhere, flying along in big strings. These became less and less common as we ascended the river.

Throughout the delta, and for a considerable distance up the river (as far as Point l'Hache), the most evident and abundant land bird was the Boat-tailed Grackle. They were new birds to me and I was struck by their large size, their shrill piercing whistle, the difference between the two sexes, and, in short, their utter dissimilarity to our Purple Grackles. They were present everywhere on the lower river, in huge flocks mostly, but many scattered individuals were seen at the same time. With them were quantities of Red-winged Blackbirds, in scattered colonies.

In the marshes there were ducks by the thousand, and our whistle never failed to scare up a perfect cloud of them. Mallards, Shovelers, both Teal, and Pintail were the commonest species, named in order of abundance. The Pintail, though seen everywhere, were numerically less

common. Numerous Black Duck (sp.?) were seen, some Scaups, probably Lesser Scaups, one flock of about sixty Gadwalls, and three flocks of Baldpates. All these birds were either feeding or resting quietly in the shallow pools between the long strips and patches of high grass and reeds, and from the main-top I could look directly down upon them. It made a splendid sight, and even at the risk of exhausting the patience of the reader I cannot help describing the appearance of the scene as it seemed to an enthusiastic bird lover, to whom many of the species observed were new or unfamiliar.

From my elevated vantage point, the thousands of ducks first attracted attention, but almost immediately one noticed the long strings of flapping Pelicans, the noisy hosts of Grackles, and the bands of Laughing and Ring-billed Gulls that drifted over the marshes and wheeled in our wake, before one's eyes sought out the various other kinds of fowl not quite so obviously in evidence. In the pools were countless Herons, chiefly Little Blues, Louisianas, and Great-Blues, with an occasional Egret. Nearly every pool sheltered eight or nine "assorted Herons," including now and then Night Herons of both species. There were beds of Coots in the larger pools, and sometimes a Pied-billed Grebe or two. In one pool was a flock of some fifteen Greater Yellowlegs. Four Lesser Yellowlegs, some Dowitchers, and many Least or Semipalmated Sandpipers were seen here and there. Hudsonian Curlew were at times not uncommon, and we saw several flocks on the wing.

Small Terns were occasionally seen, perhaps Foster's, three of which flew by uttering harsh rattling cackles and some shrill peeping notes, unlike any of the varied notes of the Common Tern. Large Terns were common, but whether Royal or Caspian I could not tell. Once we passed three great White Pelicans, looming up over the marshes like Norwegian barks with skysails set. Further up the river Killdeer, Spotted Sandpipers and Black Vultures were extremely common. So were mosquitoes! But it seemed to me that if anything was to be seen in lower Louisiana at all it was sure to be found in terrific abundance, and, given the birds, I was only too glad to let the mosquitoes do the'r worst!

March 28, 1918. Anchored off Sabine Pass, Texas. Approximately 500 Blue Geese, (*Chen caerulescens*), in long strings, flew from the wide marshes on shore directly into the Gulf, many passing over the ship. Their flight is quite different from that of Canada Geese, being more like that of the Brant, and even more like the flapping flight of a Heron, though the wing-beats are rapid. Compared to Canada Geese they are poor flyers, with broader, more rounded wings. Birds with white heads were in the minority.

March 29, 1918. *Migrants and waifs at sea.* From Sabine Pass to a point south-east into Gulf of Mexico, 100-150 miles offshore. A "norther," with terrific wind and rain. Three Great Blue Herons, (probably Ward's), lit on the main and foremasts, and stayed there all day, balancing

themselves against our 42 degree roll by half extending and lowering their wings to meet the motion. Among other strange visitors at a distance of 125 miles from land were a belted Kingfisher, several Tree Swallows, and many flocks of warblers, which seemed better able to weather the storm than the huge Herons. The only Warblers identified were Myrtles, Parulas, Redstarts, and a female Black-throated Blue. Three Robins came aboard in the evening.

March 30, 1918. Gulf of Mexico, en route to Tampa, Fla. Very heavy weather, with violent squalls, wind varying in direction. A Henslow's Sparrow stayed with us all day, very tame, and ate crumbled hard-tack and drank rain water from the boat-covers. Passed five Louisiana Herons, making heavy weather of it.

March 31, 1918. About 85-95 miles off entrance of Tampa Bay. Several Myrtles, a Parula, a Black and White, and one Prothonotary Warbler flew aboard and spent the morning on the boat-deck, all very tame. Strangely enough, the Myrtles ate bread-crumbs and crumbled hard-tack thrown to them by compassionate sailors!

VI

MIGRANT JAEGERs IN LAST OF MARCH AND EARLY APRIL.

March 14, Bound north. About 180 miles off the west coast of Florida, somewhere between Ft. Myers and Tampa; four Pomarine Jaegers followed us most of the day, the only birds seen with the exception of six or eight Herring Gulls and the Phalaropes mentioned elsewhere.

March 31, to April 10. Cruising in Gulf of Mexico, from Tampa to Key West; and from Key West northwards up the east coast of Florida, rather close inshore (fifteen to twenty-five miles off). During this time a few Jaegers were seen every day, numbers being nearly equally divided between the Pomarine and Parasitic species. One or more Long-tailed Jaegers were definitely identified, and two or three doubtful individuals seen at too long range. This latter species, April 8, between Alligator Shoals and St. Lucie inlet. On April 9, approaching Jacksonville, eight or ten Pomarine and about five Parasitic Jaegers followed us northward all day, even up the St. John's river as far as Mayport. According to Cooke practically nothing is known of the northward migration of the Jaegers, and the above notes may be of additional interest on this account.²

774 Madison Ave., New York, N. Y.

²Cooke, W. W., 1915. Distribution and migration North Am. Gulls—and their allies: Bull. no. 292 U. S. Dept. Agr.

THE PLUMAGES OF GULLS IN RELATION TO AGE AS
ILLUSTRATED BY THE HERRING GULL (*LARUS*
ARGENTATUS) AND OTHER SPECIES.

BY JONATHAN DWIGHT, M. D.

Plates X-XIV

It is nearly a score of years since I placed on record (Auk, 1901, pp. 49-63) the fact that Gulls and Terns pass through a perfectly definite series of plumages separated by definite moults. This record, modified only a little in details, is as applicable today, as it was then, to the Gulls of the world, and it is only because I have gathered together new characters for determinibg the age of the so-called "immature" specimens that I have again brought up the subject.

While each species has peculiarities of plumage at different ages that are specific, it must be remembered that not all species at the same age have equally developed plumages, nor do all birds of the same species at the same age have equally developed plumages. The large species require a longer time to attain adult plumage than do the smaller ones; and there is always a percentage, probably a small one, in every species of laggards or backward birds that require a longer time in reaching maturity than do the average individuals. These laggards are a source of confusion and have been largely responsible for wrong estimates of age and of the duration of "immature" plumages. They are apparently about one plumage behind their fellows, but in a series of skins taken at random, it is hardly possible to do more than guess the percentage that deviates from the average plumage. At each successive moult, however, birds advance in their plumage towards maturity, but not equally. We do find, however, some very definite characters that are correlated with age, and by combining them, we find that the smaller Gulls attain fully adult plumage at their first postnuptial or annual moult, which is at the beginning of their *second* year, medium sized Gulls, at the beginning of their *third*, and large Gulls at the beginning of their *fourth* year. The percentage of laggards is apparently greatest at the first period of moult and progressively diminishes afterwards.

Another source of confusion in the study of Gulls is due to the fact that different areas of plumage in the same bird advance toward maturity at different paces, although no changes in plumage save fading occur except at periods of moult. The flight-feathers of the wings and the quill-feathers of the tail are moulted but once in the year while the plumage of the body is moulted twice, so that evidences of immaturity are lost sooner in the body plumage. Nor do discrepancies of development stop here for we may find well developed wings and tail combined with a backward body plumage or vice-versa. But in spite of complications it is possible to group together certain characters so that we have definite plumages representing the average advance made at each period of moult. It may be well to first take up separately each of the several characters by which we may judge the age of a given specimen.

1. *Shape of primaries and rectrices.* Perhaps the most important of the characters is the structural difference in the shape of the primaries and tail-feathers of birds in their first year as compared with those of a second or later year. My attention was directed to this by Mr. H. Ira Hartshorn who in making drawings to scale for me found discrepancies to exist. An examination of specimens of Gulls of the world shows that throughout the first year, and until the first postnuptial or annual moult, the primaries as a rule are more pointed and the rectrices more rounded than in later years. The new second year primaries acquired at this moult, which removes the juvenal wings and tail, have more rounded, broader tips than in the first year, being practically the shape of fully adult feathers. There is some variation, but as a rule in first year birds, the extreme tip appears to be pinched to a point, the outer or distal feather usually showing this peculiarity more markedly than the others (see Plate X, fig. 1, and Plate XI, fig. 1).

A similar difference in shape prevails in the tail-feathers of Gulls, first-year or juvenal rectrices being rounded (see Plate X, fig. 2, and Plate XI, fig. 2) and replaced at the first postnuptial moult by feathers of the second year which are more or less squared at the tip (see Plate XII, fig. 2). The outer rectrix is perhaps the most diagnostic and as the wings and tail are moulted only once a year the value of these characters is great, for many birds after

the partial prenuptial or spring moult resemble very closely the second-year birds that have not as yet begun this moult.

2. *Pattern of primaries and rectrices.*—Next to shape, the patterns that mark the quill-feathers of the wings and tail are of importance. Every species has a definite adult wing pattern, which, except in the smaller species, is not even foreshadowed in first, and only occasionally indicated in second-year plumages. The same thing is true of the tails. The juvenal or first year primaries in the larger and medium-sized Gulls are as a rule uniformly dingy or black and the second-year primaries that come at the first postnuptial moult scarcely differ although the medium-sized species may have faint indications of "wedges" of a lighter shade on the inner primaries, obscure apical spots or perhaps a dingy "mirror" on the distal quill. The small Gulls during the first year are marked by primaries with more or less dusky areas, but the adult pattern is usually indicated. After the first postnuptial moult then, the new primaries of small Gulls are of adult pattern, those of the larger sized Gulls have a slight suggestion of adult pattern, while those of the largest Gulls at this period hardly differ from the first year primaries. The "wedges" develop sooner than the apical and other spots and the distal primary is the slowest of them all in acquiring adult characters.

Tails develop a little faster than do primaries, but in the largest Gulls three moults are required and often four before all traces of immaturity disappear leaving the tail either pure white or banded as it is in the adults of some foreign species.

3. *Color and pattern of body plumage.*—Under this heading may be included all of the plumage except the remiges and rectrices, and while there is the greatest divergence between the various consecutive plumages, the advance towards maturity in most of the species may be traced through the gradual elimination of the dusky feathers of youth. As the body plumage undergoes two moults each year, the advance is rapid, but at the early moults some brown or dusky feathers are acquired that differ little if any from those that precede them and these immature feathers are often a ready clue to age. The moults of young birds are protracted and the postjuvenal overlaps the prenuptial. Small Gulls at the postjuvenal moult in the autumn acquire a considerable

part of their adult body plumage, and they assume at the first prenuptial moult a plumage that is adult save for wings and tail and finally through the first postnuptial moult they become fully adult. Larger Gulls are quite or very nearly adult in body plumage after the second postnuptial moult but the largest are usually not in full adult dress until after their third postnuptial moult.

4. *Colors of bill and feet.*—The bill is not only rather slow in developing color, but the color often varies between winter and summer. Doubtless there is much more to be learned from fresh birds but museum specimens show indications of immaturity in dark bands and dusky cloudings up to the third and possibly fourth year in the larger species while in the smaller, the time varies from perhaps less than a year to one or two years as the size increases.

The color of the feet and tarsi and eye-ring (the iris too) may be studied successfully only in fresh birds for these parts change color as skins dry so that no clue to their original color remains. In young birds the colors are, as a rule, pale deepening with age to the more brilliant tints or deeper shades of maturity.

It has been my endeavor to show the characters as we find them in *average* birds and it is difficult not to blur the picture with too many details of exceptions. It is no easy matter to pick out typical average birds even with large series to choose from but the accurate sketches by Mr. Hartshorn of wing tips and tails speak for themselves. In explanation of them I will first give a brief diagnosis of the plumages of a small species, Bonaparte's Gull (*Larus philadelphia*) which acquires adult plumage at its first postnuptial moult and then of a large species, the Herring Gull (*Larus argentatus*) which does not acquire adult plumage until its third postnuptial moult, some few specimens retaining slight evidences of immaturity even until the fourth.

Larus philadelphia. BONAPARTE'S GULL.

1. *Natal Down.* Wholly a body plumage and like most Gulls at this stage, the downy chick is whitish or buffy brown clouded with large and small dusky spots.

2. *Juvenal Plumage.* Primaries, pointed, largely white, the tips and outer webs in part, black (Plate X, fig. 1). Tail with rectrices rounded at tips, white, banded subterminally with black (Plate X, fig. 2). Body plumage has much to suggest the adult being chiefly white below but the upper surface is washed and clouded with browns. Bill, pale with dark tip.

3. *First Winter Plumage.* A partial postjuvenal moult in the late fall replaces many of the brown feathers by adult gray ones, but a number of mixed ones may also come in. The juvenal wings and tail remain.

4. *First Nuptial Plumage.* A partial first prenuptial moult in the late winter brings the body plumage a little nearer to that of the adult, the browns being farther diminished.

5. *Second Winter Plumage.* The first postnuptial moult produces the adult plumage except in a very small number of backward birds. The primaries are rounded with the white areas larger (Plate X, fig. 3). The tail has square tipped rectrices and is pure white (Plate X, fig. 4). After this moult, only an occasional bird shows traces of immaturity in slight smudging of the tail or in duskiess of the primaries.

Larus argentatus. HERRING GULL.

1. *Natal Down.* At this stage only body plumage is found which is grayish or buffy, coarsely mottled or clouded with dull clove-brown.

2. *Juvenal Plumage.* Primaries, pointed and dull brownish black. (Plate XI, fig. 1). Rectrices, rounded at tips, dull brownish black, vari-ously but *coarsely* mottled with white, especially on the outer feathers and basally. (Plate XI, fig. 2.) Body plumage, mostly grayish or sooty brown irregularly mottled and barred with buff, the markings coarsest on the upper surface, the lower parts being of a more uniform grayish brown. Bill, black.

3. *First Winter Plumage.* More or less of the body plumage is renewed by a partial postjuvenal moult which may be delayed until well into the winter. The new growth resembles the old, but it usually shows less mot-tling, the color areas being larger and less broken up. The juvenal wings and tail remain.

4. *First Nuptial Plumage.* A partial prenuptial moult renews some of the now worn and faded body plumage, brown feathers, much like those of the juvenal or first winter stages, growing for the third time. The bill during the winter slowly grows paler at the base, the extent of the black diminishing. The postjuvenal and the prenuptial moults seem to overlap, the former often being delayed and perhaps in some cases suppressed, but as brown feathers mark all renewals during the first year, many specimens of this period appear superficially at least to be in juvenal plumage.

5. *Second Winter Plumage.* The result of a complete first postnuptial moult. Primaries, rounded and dull black, indistinct "wedges" showing

on several of the proximal (Plate XII, fig. 1)). Rectrices, square-tipped and dull black, more *finely* peppered or sprinkled with white than in the first winter. (Plate XII, fig. 2). Body plumage, much like the first winter, but usually whiter below and about the head and with a few gray feathers on the back. Bill, black from tip to nostrils, the base pale and yellowish in dried skins.

6. *Second Nuptial Plumage.* A partial second prenuptial moult renews some of the body plumage, birds becoming much whiter below and grayer on the back. Many of the new feathers, however, are still brown or partially so.

7. *Third Winter Plumage.* A complete second postnuptial moult widens the field for variation because pattern is now pronounced in the primaries (Plate XIII, fig. 1). They are black with more or less white tipping, a "mirror," often with blurred margin, of variable extent is found on the "first" or distal, and gray "wedges" of greater or less extent appear. The tail also shows new pattern (Plate XIII, fig. 2), smudges of black on the white rectrices varying greatly in extent. In some birds the red spot on the bill appears indistinctly but as a rule a dusky band or clouding is found. The body plumage is either adult or there may be a few obscurely dusky areas on the outer surface of the wings.

8. *Third Nuptial Plumage.* A partial third prenuptial moult is hardly noticeable among the body feathers that are already mostly adult.

9. *Fourth Winter Plumage.* After the third postnuptial moult, which is of course complete, it is unusual for evidences of immaturity to remain. The primaries (Plate XIV, fig. 1) are all white tipped and the "mirror" on the first is large and clearly defined, sometimes merging with the white tip, although it is possible that such specimens are still older. A white spot may or may not be found on the next primary, and the "wedges" are more extended but vary with each primary. The tail is now wholly white (Plate XIV, fig. 2). The body plumage is fully adult. The bill is bright yellow with a red spot at angle of mandible.

So it is possible to trace the development of plumages in the Gulls with considerable accuracy and it is a pity to see writers of recent date still clinging to the inadequate term "immature," and to the old-fashioned idea that many years are required to attain adult plumage. With moulting specimens to bridge the gaps between plumages and knowing the characters that develop in sequence much can be learned about age and it is with such material at hand that I have endeavored to show as briefly as the conditions permit, the correlation that exists in the Gulls between plumage and age.

Taking the Gulls of the North American Check List, they may be grouped as follows:

1. Two-year plumage-cycle (like *Larus philadelphia*):—*Xema sabini*, *Rhodostethia rosea*, *Larus minutus*, *Larus franklini*, *Larus atricilla*, *Rissa brevirostris* and *Rissa tridactyla*.

2. Three-year plumage-cycle:—*Larus heermanni*, *Larus canus*, *Larus brachyrhynchus*, *Larus delawarensis* and *Pagophila alba*.

3. Four-year plumage-cycle (like *Larus argentatus*):—*Larus californicus*, *Larus vegae*, *Larus affinis*, *Larus occidentalis*, *Larus schistisagus*, *Larus marinus*, *Larus nelsoni*, *Larus kumlien*, *Larus glaucescens*, *Larus leucopterus* and *Larus hyperboreus*.

43 W. 70th Street, New York, N. Y.

THE SUBSPECIES OF BRANTA CANADENSIS (LINNAEUS)¹

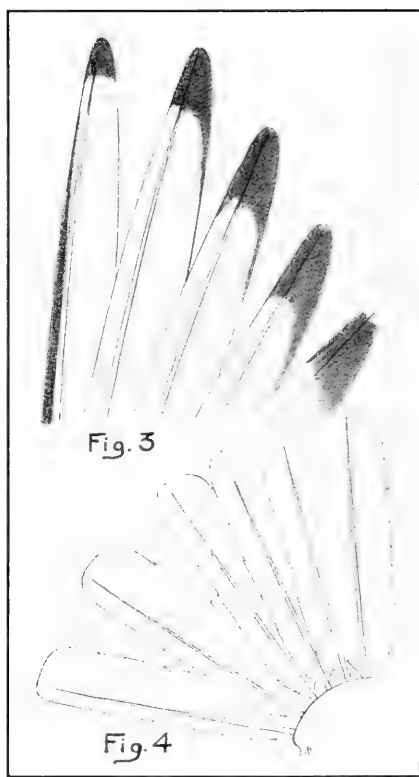
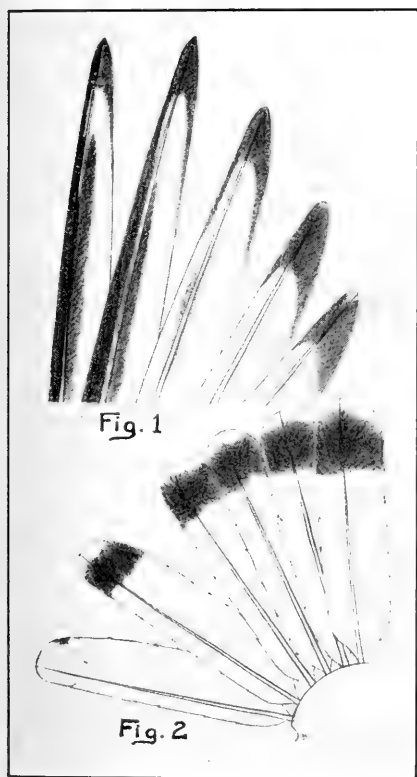
BY H. S. SWARTH

IN the January, 1920, issue of 'The Auk' (pp. 94-102) Mr. J. D. Figgins has a paper on "The Status of the Subspecific Races of *Branta canadensis*." This paper is devoted in large part to severe criticism of a publication of my own upon the same subject.² I could not possibly take exception to Mr. Figgins for differing from me in matters of opinion, nor for publishing his conclusions. I am, however, perfectly justified in feeling resentful at the ungracious wording of his argument. I object to such statements, for example, as that measurements I have taken are unreliable and that I have suppressed such measurements as did not answer my purpose. I object to having statements ascribed to me that I did not make. I object to having statements of mine "interpreted"—I do not think they need it.

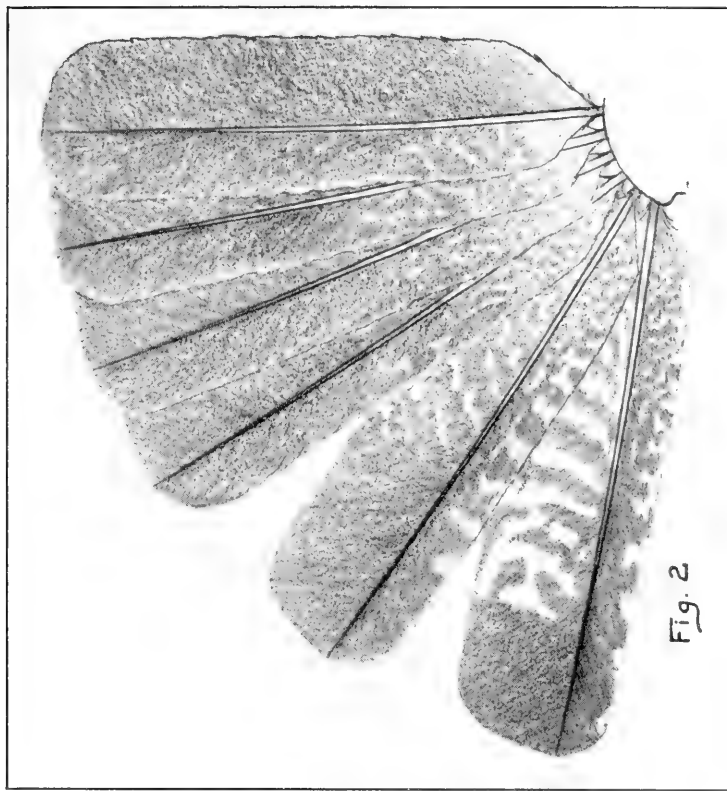
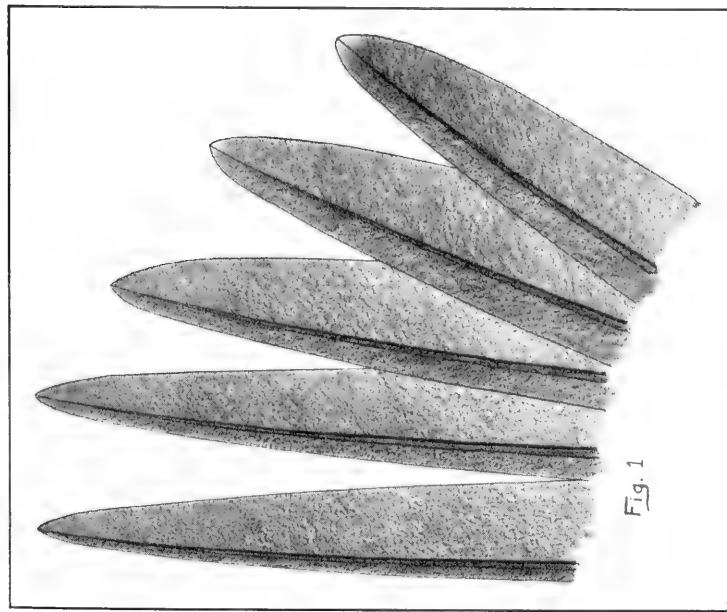
Before discussing in detail some of the statements he has made, it is best, perhaps, to give Mr. Figgins' conclusions, then some of my objections to them. He says finally: "It is, therefore, proposed that '*hutchinsi*' and '*occidentalis*' be eliminated as subspecific forms, that '*minima*' be raised to specific rank and that the occas-

¹Contribution from the Museum of Vertebrate Zoology of the University of California.

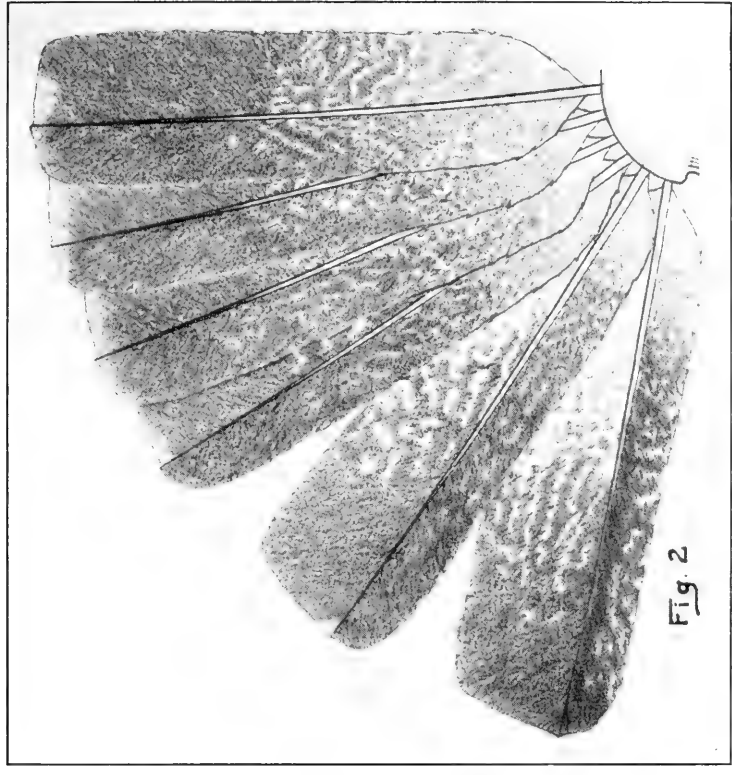
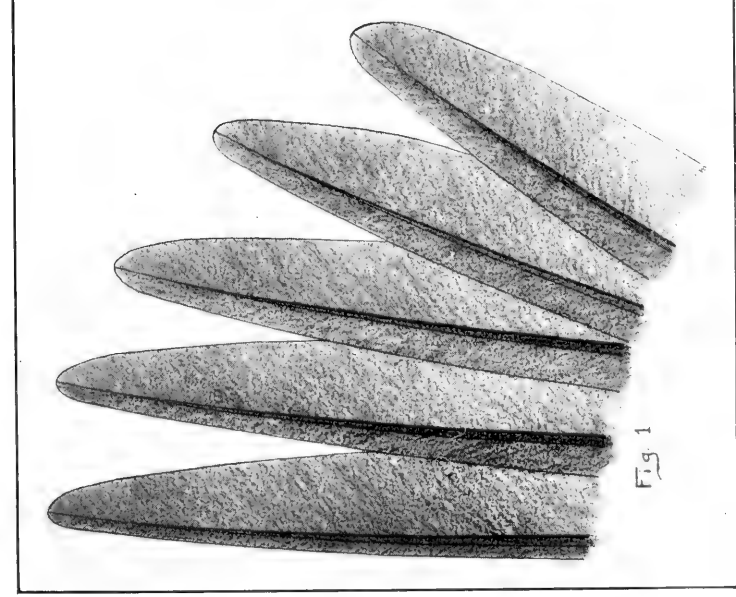
²A study of a collection of geese of the *Branta canadensis* group from the San Joaquin Valley, California. Univ. Calif. Publ. Zool., vol. 12, 1913, pp. 1-24, pls. 1-2, 8 text figs.



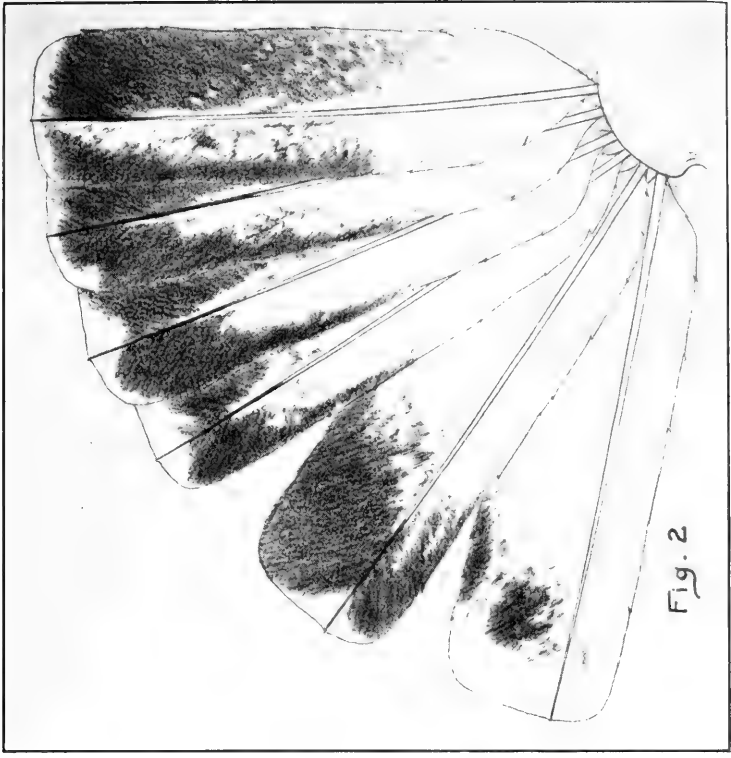
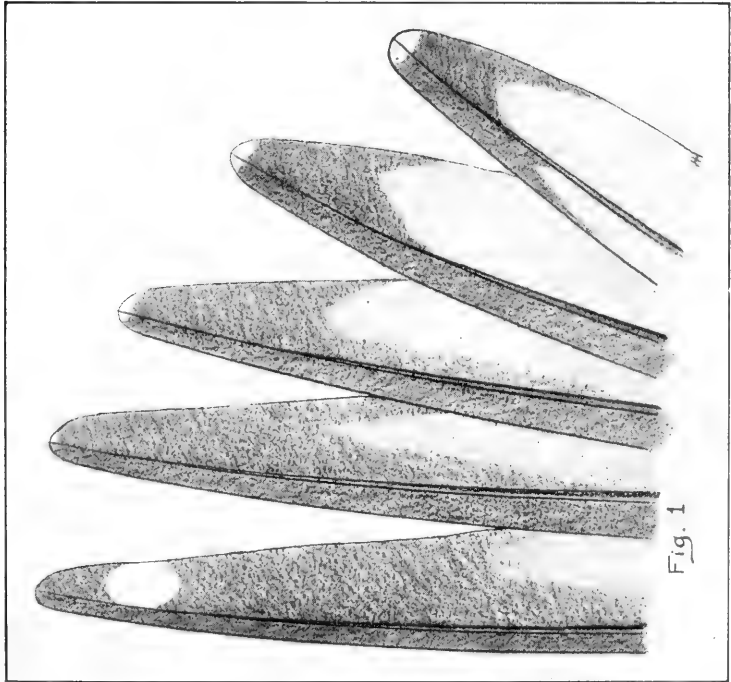
LARUS PHILADELPHIA



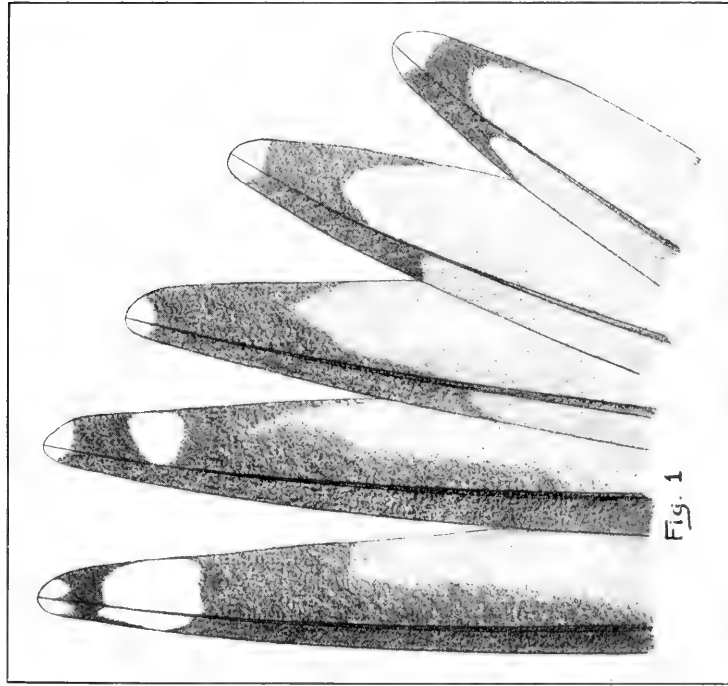
LARUS ARGENTATUS, FIRST YEAR (JUVENAL).



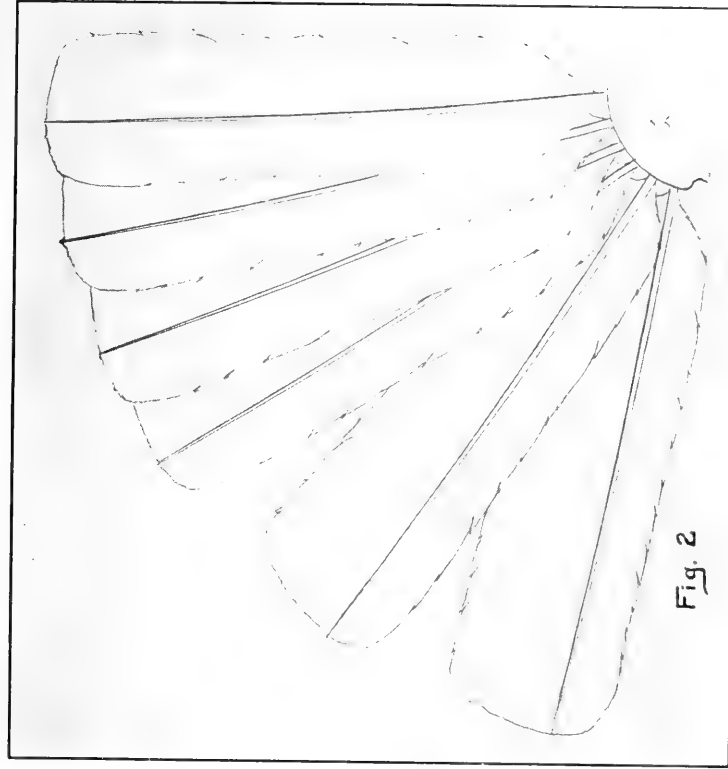
LARUS ARGENTATUS. SECOND YEAR



LARUS ARGENTATUS. (THIRD YEAR).



LARUS ARGENTATUS. (FOURTH YEAR).



ional 'inextricable' examples be recognized as hybrids." Presumably *Branta canadensis* is also to be considered as a species, though he does not say so. At any rate it will be necessary to do so, to supply a second parent for his hybrids.

Now to come to details. "On page three of 'A Study of a Collection of Geese . . .' Swarth states, in a discussion of thirty-six specimens considered as *hutchinsi*, 'twenty-five are males.' Without an explanation of his reasons, he employs but ten of that sex as representative of the differences he describes on page fourteen. It is, therefore, not unreasonable to conclude that the differences he finds in the minimum and maximum measurements of wing, culmen and tarsus, as compared with the findings of other writers, may be due to the elimination of the remaining fifteen males belonging to the series." In plain language, I am accused of juggling the measurements taken to make them accord with my own preconceived ideas.

Mr. Figgins' premise is a false one. The diagnoses of the subspecies given on pages 14-15 are based on *all* the specimens examined. The summaries of measurements (pp. 14-15) are from a limited number (ten in the case of *hutchinsi*), but on pages 16-18 he will find the important measurements of *all* the specimens, all, that is, except a very few that were defective so as not to permit of accurate measurement of one part or another. Furthermore, the extremes as given in the summaries on pages 14-15 are the extremes of all the measurements taken, not from a limited selection. An ordinarily careful reading of my paper would have shown this.

Then, in connection with the subspecies *occidentalis*: "Swarth's contention for a difference in size when compared with *canadensis* is not convincing" (Figgins, l. c., p. 98). My "contention" was that "the maximum of *occidentalis* is below the largest *canadensis*" (Swarth, l. c., p. 7). I did not assert that the size difference between the two was diagnostic. Mr. Figgins has not shown my statement to be erroneous. Then: "The present writer interprets Swarth's description of *occidentalis* as an attempt to justify the continuance of this variation as a subspecies by crediting it as being a more or less resident form inhabiting the Pacific Coast . . .," etc. (Figgins, l. c., p. 98). I think I do not need Mr. Figgins to "interpret" my statements, and I resent an "inter-

pretation" that claims to show an unworthy motive. I stated, in language that seems to me perfectly explicit (Swarth, l. c., p. 10), my belief that *occidentalis* is a recognizable subspecies. I have had no reason since to change my mind.

Another quotation: "Swarth shows that '*hutchinsi*' attains its greatest abundance on the Pacific coast . . ." (Figgins, l. c., p. 101). What I really said was that in California in winter we find "vast numbers of typical *minima*, a lesser number of intergrades, and comparatively few typical *hutchinsi*" (Swarth, l. c., p. 3). One feels rather helpless when he finds his opponent ascribing to him statements exactly the opposite of what he did say. The only assumption permitted me is that Mr. Figgins read my paper too carelessly to judge its contents.

So much for the personal side of the matter, though there are other statements, too, to which I might well take exception. Now, for Mr. Figgins' conclusions, especially as regards the subspecies *occidentalis*.

In the first place, there is no evidence in his paper that he examined a single example of *occidentalis*. If he had any specimens at hand from the coast of southeastern Alaska he does not say so. If he did have, and if he could compare geese from that region with Canada Geese from the interior of the United States and still not appreciate the differences in color, there is nothing more to be said on that score. Others can distinguish these differences without difficulty.

Then, Mr. Figgins confuses two entirely different problems, the characters of the subspecies that inhabits the northwest coast, and the name that should be applied to the race. His argument that some of the characters first ascribed to the subspecies are unreliable is, of course, nothing new and of no importance now that the more stable characters are better understood. The fact that the type specimen of *occidentalis* is not representative of the mode of that subspecies, as now defined, is obviously no reason why the form should not be recognized. I consequently fail to understand why my detailed description of this type specimen "would appear to effectually dispose of *occidentalis* as a subspecific variety" (Figgins, l. c., p. 98).

Mr. Figgins says: "The statement [by Swarth] that 'Of the Alaskan series the Prince William Sound birds are smaller and

darker than those of the Sitkan district . . . ' points rather conclusively to gradation through hybridism." His wording is obscure, but let that pass. Then: "The literature dealing with the distribution of the genus *Branta* fails to take into account the region lying between Prince William Sound and Bering Sea. . . . A large part of this territory is ideal breeding ground and to the present writer's personal knowledge, examples of *Branta* are found there in considerable numbers during July, August and September, although no specimens were taken. There are no land barriers that would prohibit these birds crossing from Prince William Sound to Cook Inlet and hence it is not unreasonable to expect that *minima* and *canadensis* and Baird's so-called *occidentalis* interbreed and hence the 'variations' and specimens that intergrade 'inextricably'" (Figgins, l. c., p. 98).

"No specimens were taken!" Yet we are expected to accept as proof of the existence of an extraordinary condition his statement (which I will not deny) of the mere fact that geese are abundant in certain parts of Alaska. It would require the collection of a large series of skins, and the most careful analysis of their peculiarities and of the circumstances under which the birds were taken to carry conviction of the truth of the statement that is made so airily. "Hybridism" has been much used of late to explain things that seem obscure. Mr. Figgins uses the term repeatedly. It is an easy way to wave difficulties aside, but it is an exceedingly difficult thing to prove. Of course on questioning the theory of "hybridism" on a large scale we at once have the Flickers (*Colaptes*) pointed out in triumphant proof, but it may be said that even among these variable woodpeckers there are a great many cases of peculiarities, in color at least, that can not be explained by that theory.

"It appears to be established by several authorities that the breeding range of the representatives of the genus *Branta* overlap, and it is the present writer's belief that *hutchinsi* is a hybrid intergrade between *canadensis* and *minima*" (Figgins, l. c., p. 101). Here again Mr. Figgins' premise is wrong. There are very few explicit statements of the subspecific character of geese found breeding in the far north. Most observers followed the same course as Mr. Figgins—they saw plenty of geese but "no specimens were taken."

Of course there are "intergrades" in collections—many of them. Is that not one of our tests for subspecies? It is my own main reason for regarding the four forms, *canadensis*, *occidentalis*, *hutchinsi* and *minima*, as subspecies of the one species, *Branta canadensis*.

In the foregoing discussion my comments have pertained mainly to the subspecies *occidentalis*, but Mr. Figgins' contentions regarding *hutchinsi* are, I believe, just as much open to criticism. I submit that Mr. Figgins has not proved his points. Furthermore he has not described his Mississippi Valley specimens sufficiently explicitly to enable anyone else to form an opinion regarding them, nor, for that matter, to know just what Mr. Figgins himself thinks of any particular one.

I hope it is not necessary for me to say that I do not regard my previously published paper on the races of *Branta canadensis* as the last word on the subject. In one respect I admit that it would be difficult to make me change my view—in regard to *Branta c. occidentalis*. I have handled enough specimens of that race, in the field and in the museum, to be fully satisfied of its distinctiveness as a subspecies of *Branta canadensis*, whatever name we may eventually apply to the form. Of *hutchinsi* and *minima*, breeding birds from many points and a study of breeding conditions are admittedly necessary to a full understanding of their status.

I may say that my own views upon this subject have been criticised before. Once, at least, in print, by Brooks (Condor, XVI, 1914, p. 123), and in letters to me by others. In each case, however, the suggested correction was the recognition as species of forms that I regard as subspecies. I still think that, in the lack of sufficient breeding birds of certain of the races, my method of treatment, which is the same as that in the A. O. U. 'Check-list,' is the most reasonable course to follow. That is, to regard *Branta canadensis* as a variable species, divided into four recognizable subspecies, *canadensis*, *occidentalis*, *hutchinsi*, and *minima*.

Museum of Vertebrate Zoology, Berkeley, California.

DESCRIPTION OF A NEW NORTH AMERICAN DUCK

BY WHARTON HUBER

While collecting ducks south of Las Cruces, Dona Ana County, New Mexico, during the winter and spring of 1915, I noticed numbers of very dark individuals in the flocks of Mallards flying over the sloughs and along the Rio Grande River; while during April and May these ducks were generally seen in pairs.

Upon making inquiries I find these ducks to be fairly common, especially during the late spring and early fall; they are however, just as plentiful during the winter months but are lost sight of in the large flocks of ducks that make their winter home in the Rio Grande Valley of New Mexico.

A careful study of specimens secured seem to indicate that the bird in question is an undescribed member of the Black Duck group and may be described as follows.

My thanks are due to the following for assistance rendered in preparing this paper: Dr. Witmer Stone, Mr. E. W. Nelson, Dr. H. C. Oberholser, Dr. C. W. Richmond and Mr. J. H. Riley.

Anas novimexicana NEW MEXICAN DUCK

Description: Type No. 1928. Collection of Wharton Huber. Adult male; along the Rio Grande River west of Las Cruces, Dona Ana County, New Mexico.

May 7, 1915; Wharton Huber. Forehead and top of head black streaked with pinkish buff. Auriculars and sides of neck pinkish buff streaked with black. Throat pinkish buff unstreaked. Breast black margined and mottled with cinnamon; turning to vinaceous buff on abdomen. Under-tail coverts centially black edged with grayish-white, the outer edges of the feathers margined with cinnamon-rufous. Flanks black-edged and internally streaked with cinnamon and vinaceous-buff. Back, rump and upper-tail coverts black streaked and margined with cinnamon and vinaceous-buff. Primaries mummy brown, darker on the outer webs. Under wing coverts white. Speculum dark dull bluish-violet bordered by a black band then a white band. Bill in life, pyrite yellow. Nail black. Feet and legs in life, Grenadine orange.

The fall plumage is much darker and the edgings of the feather smuch deeper cinnamon. The feathers of the throat are streaked with black.

Measurements: Type; length, 545 mm.; wing, 279; tail 94; exposed culmen, 55; tarsus, 46.

Male, 1786. Coll. Wharton Huber, Mesilla Dam, three miles southwest of Mesilla, New Mexico, April 12, 1915; length, 541 mm.; wing 275; tail, 92; exposed culmen, 57; tarsus, 47.

Male, Belen, New Mexico, December 9, 1917. Collected by Aldo Leopold; length, 550 mm.; wing, 278; tail, 89; exposed culmen, 51; tarsus, 48.

Measurements of three specimens (skins) including the type in mm.

	Length	Wing	Tail	EX Culmen	Tarsus
Type No. 1928—Adult Male. Along Rio Grande River, west of Las Cruces, New Mexico, May 7, 1915. Coll. by Wharton Huber.....	545	279	94	55	46
No. 1786—Male. Mesilla Dam, 3 miles s. w. of Mesilla, Dona Ana Co., New Mexico, April 12, 1915. Coll. by Wharton Huber.....	541	275	92	57	47
Male. Belen, New Mexico, Dec. 9, 1917. Coll. by Aldo Leopold	550	278	89	51	48

*The names of the color used are from Ridgway's "Co'lor Standards and Co'lor Nomenclature."

Habitat: The Rio Grande Valley of New Mexico from Albuquerque south to El Paso, Texas.

225 St. Mark's Square, Philadelphia, Pa.

FIFTH ANNUAL LIST OF PROPOSED CHANGES IN THE A. O. U. CHECK-LIST OF NORTH AMERICAN BIRDS.

BY HARRY C. OBERHOLSER.

THIS is the Fifth Annual List of Proposed A. O. U. Check-List additions and changes in the names of North American birds. Like the First, Second, Third, and Fourth,¹ the present list comprises only ornithological cases—*i. e.*, such as require specimens or the identification of descriptions for their determination—and consists of additions, eliminations, rejections, and changes of names due to various causes. However, only changes known to be the result of revisionary work are included; therefore no mention is here made of changes involved in names in local lists or

¹ For the four previous lists, see THE AUK, XXXIII, October, 1916, pp. 425–431; XXXIV, April, 1917, pp. 198–205; XXXV, April, 1918, pp. 200–217; XXXVI, April, 1919, pp. 266–273. The A. O. U. Committee has not as yet acted on any of these cases.

elsewhere, used without sufficient explanation or not known to be based on original research, of changes or additions queried or but tentatively made, or of the elimination of subspecies by authors who, on general principles, recognize no subspecies.

This list is intended to include everything pertinent up to December 31, 1919, and nothing after that date has been taken. In view of the volume and widely scattered character of current ornithological literature, it is not at all unlikely that some names or changes have been overlooked, and the writer would be very thankful for reference to any omissions, in order that such may be duly given a place in next year's list.

ADDITIONS AND CHANGES IN NAMES.¹

Gavia viridigularis Dwight becomes **Gavia arctica viridigularis** Dwight, because only a subspecies of *Gavia arctica*. (Cf. Bent, THE AUK, XXXVI, No. 2, April, 1919, pp. 238-242.)

Alcella Stone. Raised to generic rank. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 705, 770.) Contains one species now in the genus *Aethia*:

Alcella pygmaea (Gmelin).

Ciceronia Reichenbach. Raised to generic rank. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 705, 767.) Contains one species now in the genus *Aethia*:

Ciceronia pusilla (Pallas).

Endomychura Oberholser. Raised to generic rank. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 704, 751.) Contains two species now in the genus *Brachyramphus*:

Endomychura hypoleuca (Xantus).

Endomychura craveri (Salvadori).

†**Cepphus motzfeldi** (Benicken). *Uria motzfeldi* Benicken, Isis, August, 1824, col. 889 (Greenland). Revived as a species. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 742.)

†**Uria ringvia** Brünnich, Ornith. Bor., 1764, p. 28 (Iceland). Revived as a species. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 719.)

Pagophila eburnea (Phipps) becomes again **Pagophila alba** (Gunnerus) (*Larus albus* Gunnerus, in Leem's Beskr. Finm. Lapp., 1767, p. 285), since the latter proves to be identifiable. (Cf. Ridgway,

¹ Additions to the A. O. U. Check-List, the Sixteenth Supplement, and the First, Second, Third, and Fourth Annual Lists are marked with a dagger (†). Generic (and subgeneric) names so indicated have not hitherto stood in the lists in either generic or subgeneric sense.

Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 576-577; Oberholser, Proc. Biol. Soc. Wash., XXXII, Dec. 31, 1919, p. 199.)

- †**Larus occidentalis livens** Dwight. New subspecies. Dwight, Proc. Biol. Soc. Wash., XXXII, February 14, 1919, p. 11 (San Jose Island, Lower California). Range: Central California to southern Lower California.

Larus brachyrhynchus Richardson becomes **Larus canus brachyrhynchus** Richardson, because but subspecifically distinct from the Old World bird. (Cf. Oberholser, THE AUK, XXXVI, No. 1, January, 1919, p. 83.)

- †**Blasipus** Bruch, Journ. für Ornith., 1853, p. 96 (type, *Larus modestus* Tschudi). Recognized as a genus (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 652), to include one North American species now in the genus *Larus*:

Blasipus heermanni (Cassin).

- †**Chroicocephalus** Eyton, Cat. Brit. Birds, 1836, p. 53 (type, *Larus ridibundus* Linnaeus). Recognized as a genus (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 635-649) to include the following North American species now in the genus *Larus*:

Chroicocephalus atricilla (Linnaeus).

Chroicocephalus franklinii (Swainson and Richardson).

Chroicocephalus philadelphia (Ord).

Larus atricilla megalopterus (Bruch) becomes **Chroicocephalus atricilla** (Linnaeus). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 636-641.)

- †**Hydrocoloeus** Kaup, Skizz. Ent.-Gesch. Natürl. Syst. Eur. Thierw., 1829, p. 113 (type, *Larus minutus* Linnaeus). Recognized as a genus (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 649) to include the following North American species now in the genus *Larus*:

Hydrocoloeus minutus (Pallas).

Sterninae becomes **Sternidae**, because raised to family rank. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 449.)

Gelochelidon nilotica aranea (Wilson) becomes **Gelochelidon nilotica** (Gmelin). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 479-484.)

Gelochelidon nilotica (Gmelin) becomes **Gelochelidon anglica** (Montagu), because *Sterna nilotica* Gmelin is doubtfully applicable to the species, and its proper name is therefore *Gelochelidon anglica* (Montagu). (Cf. Hellmayr and Laubmann, Nomenclator Vögel Bayerns, 1916, pp. 29-30.)

Hydroprogne caspia imperator (Coues) becomes **Hydroprogne caspia** (Pallas). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 462-466.)

- Onychoprion fuscatus** (Linnaeus) becomes **Sterna fuscata** Linnaeus, because not generically separable. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 514.)
- Melanosterna anaetheta recognita** Mathews becomes **Sterna anaetheta recognita** (Mathews), because not generically separable from *Sterna*. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 486, 512.)
- Leptophaethon catesbyi** (Brandt) becomes **Leptophaethon lepturus catesbyi** (Brandt), because found to be only subspecifically distinct. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, p. 556.)
- Scaeophaethon rubricaudus** (Boddaert) becomes **Scaeophaethon rubricaudus rothschildi** (Mathews), so far as North America is concerned. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, p. 557.)
- Parasula** Mathews is considered to be only a subgenus. (Cf. Wetmore, Bull. Mus. Comp. Zoöl., LXIII, No. 4, August, 1919, p. 168.)
- Piscatrix** Reichenbach is considered to be only a subgenus. (Cf. Wetmore, Bull. Mus. Comp. Zoöl., LXIII, No. 4, August, 1919, p. 168.)
- Mergus americanus** Cassin becomes **Mergus merganser americanus** Cassin, because but subspecifically different from *Mergus americanus*. (Cf. Millais, British Diving Ducks, II, 1913, p. 89.)
- †**Anas platyrhynchos conboschas** Brehm. *Anas conboschas* Brehm, Naturg. Handb. Vogel Deutschl., 1831, p. 865 (Greenland). Recognized as a subspecies. (Cf. Hartert, Novit. Zool., XXV, No. 1, May 1, 1918, p. 47.) Range: Greenland.
- †**Querquedula discors albinucha** Kennard. New subspecies. Kennard, THE AUK, XXXVI, No. 4, October 1919, p. 459 (Grand Chenier, Cameron Parish, Louisiana). Range: Breeds in Louisiana; occurs east to Florida and west to Arizona; in winter south to Mexico, Costa Rica, and West Indies.
- †**Eunetta falcata** (Georgi). *Anas falcata* Georgi, Reise Russ. Reichs, I, 1775, p. 167 (Baikal region, Siberia). Recorded as North American from a specimen taken on the Pribilof Islands, Alaska. (Cf. Hanna, Journ. Wash. Acad. Sci., IX, No. 6, March 19, 1919, p. 176.)
- Marila americana** (Eyton) becomes **Marila ferina americana** (Eyton), because considered only subspecifically different. (Cf. Millais, British Diving Ducks, I, 1913, p. 14.)
- Marila affinis** (Eyton) becomes **Marila marila affinis** (Eyton), because regarded only subspecifically different from *Marila marila*. (Cf. Millais, British Diving Ducks, II, 1913, p. 68.)
- †**Somateria mollissima islandica** Brehm. *Somateria islandica* Brehm, Isis, 1830, col. 998. Recorded from northeastern Greenland. (Cf. Millais, British Diving Ducks, II, 1913, p. 3.)
- Somateria v-nigra** Gray becomes **Somateria mollissima v-nigra** Gray, because found to intergrade with some of the forms of *Somateria mollissima*. (Cf. Millais, British Diving Ducks, II, 1913, p. 4.)

Oidemia americana Swainson becomes **Oidema nigra americana** Swainson, because only subspecifically distinct from *Oidemia nigra*. (Cf. Millais, British Diving Ducks, II, 1913, p. 55.)

Exanthemops Elliot. Raised to generic rank. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, p. 562.) Its only species, now in the genus *Chen*, therefore becomes

Exanthemops rossii (Cassin).

Casmerodius egretta (Gmelin) becomes **Casmerodius albus egretta** (Gmelin), because found to be only subspecifically distinct from *Casmerodius albus*. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, pp. 557-558.)

Canutus canutus rufus (Wilson) becomes **Canutus canutus** (Linnaeus), because not considered subspecifically distinct. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 233, 238.)

Limnocinclus acuminatus (Horsfield) becomes **Pisobia acuminata** (Horsfield). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 266.)

Pisobia minutilla subminuta Middendorff becomes **Pisobia subminuta** Middendorff, because considered specifically distinct. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 269, 300.)

†**Pisobia ruficollis** (Pallas). *Trynga ruficollis* Pallas, Reis. Russ. Reichs, III, 1776, p. 700 (Kulussutai, eastern Siberia). Recorded from Nome, Alaska. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 292.)

†**Pisobia cooperi** (Baird). *Tringa cooperi* Baird, Rep. Explor. and Surv. R. R. Pac., IX, 1858, p. 716 (Raynor South, Long Island, N. Y.). Considered a good species. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 289.)

Pelidna alpina pacifica Coues becomes **Pelidna alpina sakhalina** (Vieillot). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 262-266.)

Calidris leucophaea rubida (Gmelin) becomes **Calidris alba** (Pallas). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 308-314.)

†**Neoglottis** Ridgway. New genus. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 329 (type, *Scolopax melanoleuca* Gmelin). Includes the following species now in the genera *Glottis* and *Iliornis*:

Neoglottis melanoleuca (Gmelin).

Neoglottis flavipes (Gmelin).

†**Heteractitis brevipes** (Vieillot). *Totanus brevipes* Vieillot, Nouv. Dict. d'Hist. Nat., VI, 1816, p. 410 (no locality). Recorded as North American from a specimen taken on the Pribilof Islands, Alaska. (Cf. Hanna, Journ. Wash. Acad. Sci., IX, No. 6, March 19, 1919, p. 176.)

†**Mesoscolopax** Sharpe, Cat. Birds Brit. Mus., XXIV, 1896, p. 371 (type, *Numenius minutus* Gould). Recognized as a genus. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 410). Includes the following species now in the genus *Phaeopus*:

Mesoscolopax borealis (Forster).

Squatarola squatarola cynosurae Thayer & Bangs becomes **Squatarola squatarola** Linnaeus. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 79.)

Charadrius hiaticula septentrionalis (Brehm) becomes **Charadrius hiaticula** Linnaeus. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 120-124.)

Elseya dubia (Scopoli) becomes, so far as North America is concerned, **Charadrius dubius curonicus** Gmelin, because not generically separable from *Charadrius*, and because subspecifically different from *Charadrius dubius dubius*. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, p. 559.)

Leucopoliis alexandrinus nivosus (Cassin) becomes **Charadrius nivosus nivosus** (Cassin), because specifically different from *Charadrius nivosus*, and not generically distinct from *Charadrius*. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 136-137.)

†**Charadrius nivosus tenuirostris** (Lawrence). *Aegialitis tenuirostris* Lawrence, Ann. Lyc. Nat. Hist. N. Y., VII, 1862, p. 455 (near Guantanamo, Cuba). Revived as a subspecies. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 139.) Range: southeastern United States, south in winter to Paraguay.

Ochthodromus wilsonius (Ord) becomes **Pagolla wilsonia wilsonia** (Ord), because generically distinct from **Eupoda asiatica** (Pallas). (Cf. Oberholser, Trans. Wis. Acad. Sci., Arts, and Letters, XIX, pt. 1, Dec. 30, 1918, p. 520.)

†**Pagolla wilsonia beldingi** Ridgway. New subspecies. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 112 (La Paz, Lower California). Range: Pacific Coast of America, from Lower California to Peru.

Podasocys montanus (Townsend) becomes **Eupoda montana** (Townsend) because not generically separable from the type of *Eupoda* Brandt. (Cf. Oberholser, Trans. Wis. Acad. Sci., Arts, and Letters, XIX, pt. 1, Dec. 30, 1918, p. 516.)

Arenariinae becomes **Arenariidae**, because raised to family rank. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 25, 42.)

Haematopus frazari Brewster becomes **Haematopus palliatus frazari** Brewster, because only subspecifically separable. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 28, 37.)

Asarcia Sharpe, Cat. Birds Brit. Mus., XXIV, 1896, pp. 68, 86 (type, *Fulica spinosa* Linnaeus). Raised to generic rank. (Cf. Oberholser,

Proc. Biol. Soc. Wash., XXXII, Dec. 31, 1919, p. 200.) The North American forms are:

Asarcia spinosa gymnostoma (Wagler).

Asarcia spinosa violacea (Cory).

Tachytriorchis Kaup. Raised to generic rank. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, pp. 567-568.) Its only North American species, now in the genus *Buteo*, therefore becomes

Tachytriorchis albicaudatus sennetti (Allen).

Archibuteo Brehm becomes a subgenus of *Buteo* Lacépède, because not trenchantly separable. (Cf. Hartert, Hand-List Brit. Birds, 1912, p. 115; Vogel paläarkt. Fauna, Heft IX [Band II, Heft 3], October, 1914, pp. 1114, 1128-1131; Oberholser, THE AUK, XXXVI, No. 3, July, 1919, pp. 420-421). The North American forms of *Archibuteo* will therefore now stand as

Buteo lagopus sanctijohannis (Gmelin).

Buteo ferrugineus (Lichtenstein).

†***Thalassoaetus pelagicus*** (Pallas). *Aquila pelagica* Pallas, Zoogr. Rosso-Asiat., I, 1811, p. 343, pl. (islands between Kamchatka and America). Recorded as North American from a specimen obtained on the Pribilof Islands, Alaska. (Cf. Hanna, Journ. Wash. Acad. Sci., IX, No. 6, March 19, 1919, p. 176.)

†***Melanerpes erythrocephalus erythrophthalmus*** Silloway. *Melanerpes erythrophthalmus* Silloway, Bull. Fergus County Free High School, No. 1, 1903, p. 36 (Lewistown, Fergus Co., Montana). Revived as a subspecies. (Cf. Oberholser, Canadian Field-Naturalist, XXXIII, No. 3, Sept. (Oct. 4) 1919, p. 48.)

†***Frugilegus*** Selys-Longchamps (Faune Belge, I, 1842, p. 68; type, *Corvus frugilegus* Linnaeus). Recognized as a genus. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXII, June 27, 1919, p. 141.) Includes one North American species now in the genus *Corvus*:

Frugilegus frugilegus (Linnaeus).

Agelaius phoeniceus richmondi becomes, so far as North America is concerned, ***Agelaius phoeniceus megapotamus*** Oberholser. New subspecies. Oberholser, Wilson Bull., XXXI, No. 1, March, 1919, p. 20 (Brownsville, Texas). Range: Texas to northern Vera Cruz, Mexico.

Quiscalus quiscula versicolor Vieillot becomes ***Quiscalus quiscula ridgwayi*** Oberholser. New subspecies, Oberholser, THE AUK, XXXVI, No. 4, October, 1919, p. 552 (Washington, D. C.). Range: middle eastern United States.

Passer domesticus hostilis Kleinschmidt becomes ***Passer domesticus domesticus*** (Linnaeus), because not subspecifically distinct. (Cf. Witherby, Pract. Handbook Brit. Birds, pt. II, 1919, p. 101.)

†***Hypocentor*** Cabanis, Mus. Hein., I, 1851, p. 131 (type, *Emberiza aureola* Pallas). Recognized as a genus. (Cf. Oberholser, THE AUK,

XXXVI, No. 2, April, 1919, p. 286.) The only North American species is:

Hypocentor rusticus (Pallas).

†**Passerculus rostratus halophilus** (McGregor). *Ammodramus halophilus* McGregor, *THE AUK*, XV, No. 3, July, 1898, p. 265 (Abreojos Point, Lower California). Reinstated as a subspecies. (Cf. Oberholser, *Ohio Journ. Sci.*, XIX, No. 6, April (May) 1919, p. 353.) Range: southern half of western coast of Lower California.

Centronyx Baird, *Rep. Explor. and Surv. R. R. Pac.*, IX, 1858, p. 440 (type, *Emberiza bairdii* Audubon). Raised to generic rank. (Cf. Oberholser, *Proc. Biol. Soc. Wash.*, XXXII, June 27, 1919, p. 141.) The only species therefore becomes

Centronyx bairdii (Audubon).

Passerherbulus lecontei (Audubon) becomes **Passerherbulus caudacutus** Latham (*Fringilla caudacuta* Latham, *Index Ornith.*, I, 1790, p. 459), because antedated by this name. (Cf. Oberholser, *Proc. Biol. Soc. Wash.*, XXXII, April 11, 1919, p. 47.)

†**Thryospiza mirabilis** Howell. New species. Howell, *THE AUK*, XXXVI, No. 1, January, 1919, p. 86 (Cape Sable, Florida). Range: extreme southern Florida.

Spizella monticola (Gmelin) becomes **Spizella arborea** Wilson (*Fringilla arborea* Wilson, *Amer. Ornith.*, II, 1810, p. 123, pl. XVI, fig. 3; eastern Pennsylvania), since *Fringilla monticola* Gmelin is a synonym of *Zonotrichia leucophrys*. (Cf. Oberholser, *Proc. Biol. Soc. Wash.*, XXXII, June 27, 1919, p. 139.) The subspecies of the Tree Sparrow will, therefore, stand as follows:

Spizella arborea arborea (Wilson).

Spizella arborea ochracea Brewster.

†**Junco oreganus pontilis** Oberholser. New subspecies. Oberholser, *Condor*, XXI, No. 3, June 6, 1919, p. 119 (El Rayo, Hanson Laguna Mts., northern Lower Calif.). Range: Hanson Laguna Mountains, Lower California.

Junco mearnsi townsendi Anthony becomes **Junco oreganus townsendi** Anthony, because found to be subspecifically connected with *Junco oreganus*. (Cf. Oberholser, *Condor*, XXI, No. 3, June 6, 1919, p. 120.)

Junco mearnsi insularis Ridgway becomes **Junco insularis** Ridgway, because considered to be a distinct species. (Cf. Miller, *THE AUK*, XXXVI, No. 2, April, 1919, p. 296.)

†**Melospiza melodia semidiensis** Brooks. New subspecies. *Melospiza* [sic] *cineria* [sic] *semidiensis* Brooks, *Proc. New Engl. Zool. Club*, VII, Nov. 4, 1919, p. 27 (North Semidi Island, Semidi Islands, Alaska).

†**Pipilo fuscus aripolius** Oberholser. New subspecies. Oberholser, *Condor*, XXI, No. 5, Sept. 30, 1919, p. 210 (San Pablo, Lower Calif.). Range: middle Lower California.

- Pipilo crissalis crissalis** (Vigors) becomes **Pipilo fuscus crissalis**, because found to be only subspecifically distinct. (Cf. Oberholser, Condor, XXI, No. 5, Sept. 30, 1919, p. 211.)
- Pipilo crissalis senicula** Anthony becomes **Pipilo fuscus senicula**, because found to be only subspecifically distinct. (Cf. Oberholser, Condor, XXI, No. 5, Sept. 30, 1919, p. 211.)
- Pipilo crissalis carolae** McGregor becomes **Pipilo fuscus carolae** McGregor, because found to be only subspecifically distinct. (Cf. Oberholser, Condor, XXI, No. 5, Sept. 30, 1919, p. 211.)
- Zamelodia melanocephala melanocephala** (Swainson) becomes, so far as North America is concerned, **Hedymeles melanocephalus papago** Oberholser. New subspecies. Oberholser, THE AUK, XXXVI, No. 3, July, 1919, p. 412 (Santa Cruz River, west of Patagonia Mts., Arizona).
- Zamelodia melanocephala capitalis** (Baird) becomes **Hedymeles melanocephalus melanocephalus** (Swainson), because found to be the typical race. (Cf. Oberholser, THE AUK, XXXVI, No. 3, July, 1919, pp. 408-411.)
- Piranga erythromelas** (Vieillot) becomes **Piranga olivacea** (Gmelin). (*Tanagra olivacea* Gmelin, Syst. Nat., I, ii, 1789, p. 889; Hempstead, Long Island, N. Y.) because the latter name has priority. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, pp. 575-576.)
- Piranga hepatica hepatica** Swainson becomes, so far as North America is concerned, **Piranga hepatica oreophasma** Oberholser. New subspecies. Oberholser, THE AUK, XXXVI, No. 1, January, 1919, p. 74 (Pine Canyon, Chisos Mts., Texas). Range: southwestern United States to central Mexico.
- †**Lanius ludovicianus grinnelli** Oberholser. New subspecies. Oberholser, Wilson Bull., XXXI, No. 3, Sept., 1919, p. 87 (San Fernando, Lower Calif.). Range: north central Lower California.
- Dendroica bryanti castaneiceps** Ridgway becomes **Dendroica erithachorides castaneiceps** Ridgway, because *Dendroica bryanti* Ridgway proves to be but a subspecies of *Dendroica erithachorides* Baird. (Cf. Oberholser, THE AUK, XXXVI, No. 1, January, 1919, p. 85.)
- †**Anthus spinoletta japonicus** Temminck and Schlegel. *Anthus pratensis japonicus* Temminck and Schlegel, Fauna Japonica, Aves, 1850, p. 59, pl. 24 (Japan). Recorded as North American from a specimen taken on the Pribilof Islands, Alaska. (Cf. Hanna, Journ. Wash. Acad. Sci., IX, No. 6, March 19, 1919, p. 176.)
- Salpinctes guadeloupensis** Ridgway becomes **Salpinctes obsoletus guadeloupensis** Ridgway, because shown to be only a subspecies of *Salpinctes obsoletus*. (Cf. Oberholser, THE AUK, XXXVI, No. 3, July, 1919, p. 407.)
- Salpinctes guadeloupensis proximus** Swarth becomes **Salpinctes obsoletus proximus** Swarth, because it proves to be a subspecies

of *Salpinctes obsoletus*. (Cf. Oberholser, THE AUK, XXXVI, No. 3, July, 1919, p. 408.)

Nannus hiemalis hiemalis (Vieillot) becomes **Nannus troglodytes hiemalis** (Vieillot), because found to be a subspecies of *Nannus troglodytes* (Linnaeus). (Cf. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 236.)

Nannus hiemalis pacificus (Baird) becomes **Nannus troglodytes pacificus** (Baird), because found to be a subspecies of *Nannus troglodytes* (Linnaeus). (Cf. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 235.)

Nannus hiemalis helleri (Osgood) becomes **Nannus troglodytes helleri** (Osgood), because found to be a subspecies of *Nannus troglodytes* (Linnaeus). (Cf. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 234.)

Nannus hiemalis semidiensis Brooks becomes **Nannus troglodytes semidiensis** Brooks, because found to be a subspecies of *Nannus troglodytes* (Linnaeus). (Cf. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 234.)

Nannus alascensis (Baird) becomes **Nannus troglodytes alascensis** (Baird), because found to be a subspecies of *Nannus troglodytes* Linnaeus. (Cf. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 229.)

Nannus meliger Oberholser becomes **Nannus troglodytes meligerus** (Oberholser), because found to be a subspecies of *Nannus troglodytes* (Linnaeus). (Cf. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 227.)

†**Nannus troglodytes kiskensis** Oberholser. New subspecies. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 228 (Kiska Harbor, Kiska Island, Aleutian Islands, Alaska). Range: Kiska Island and Little Kiska Island, Alaska.

†**Nannus troglodytes petrophilus** Oberholser. New subspecies. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 232 (Unalaska, Unalaska Island, Alaska). Range: Unalaska, Amaknak, and Akutan islands in the Aleutian Islands, Alaska.

†**Nannus troglodytes tanagensis** Oberholser. New subspecies. Oberholser, Proc. U. S. Nat. Mus., LV, April 28, 1919, p. 230 (Tanaga Bay, Tanaga Island, Aleutian Islands, Alaska). Range: Islands of Tanaga, Adak, and Atka, Aleutian Islands, Alaska.

Acanthopneuste borealis (Blasius) becomes **Acanthopneuste borealis kennicotti** (Baird). (*Phyllopneuste kennicotti* Baird, Trans. Chicago Acad. Sci., I, 1869, p. 313, pl. XXX, fig. 2; St. Michael, Alaska), because the North American bird proves to be subspecifically separable. (Cf. Oberholser, THE AUK, XXXVI, No. 3, July, 1919, p. 407.)

Hylocichla aliciae aliciae (Baird) becomes **Hylocichla minima aliciae** (Baird), because *Hylocichla minima* (Lafresnaye), which is *Hylocichla*

aliciae bicknelli Ridgway, is earlier. (Cf. Bangs and Penard, Bull. Mus. Comp. Zoöl., LXIII, No. 2, June, 1919, p. 30.)

Hylocichla aliciae bicknelli Ridgway becomes ***Hylocichla minima minima*** (Lafresnaye) (*Turdus minimus* Lafresnaye, Rev. Zool., XI, No. 1, Jan., 1848, p. 5 [Bogota, Colombia]), because the latter name has priority. (Cf. Bangs and Penard, Bull. Mus. Comp. Zoöl., LXIII, No. 2, June, 1919, p. 30.)

REJECTIONS AND ELIMINATIONS.¹

****Coprotheres pomarinus camtschaticus*** (Pallas) = ***Coprotheres pomarinus*** (Temminck). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 681-686.)

Larus hyperboreus barrovianus Ridgway vs. ***Larus hyperboreus hyperboreus*** Gunnerus. Proposed elimination as a subspecies (cf. Dwight, THE AUK, XXXVI, No. 2, April, 1919, pp. 242-248) rejected. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXII, Sept. 30, 1919, pp. 173-175.)

****Onychoprion*** Wagler = ***Sterna*** Linnaeus. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 459, 485.)

****Melanosterna*** Blyth = ***Sterna*** Linnaeus, because not generically separable. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 486.)

****Aestrelata diabolica*** (Lafresnaye) = ***Aestrelata hasitata*** (Kuhl). (Cf. Bangs and Penard, Bull. Mus. Comp. Zoöl., LXIII, No. 2, June, 1919, pp. 21-23.)

Scaephaethon Mathews vs. subgenus ***Scaephaethon***. (Cf. Wetmore, Bull. Mus. Comp. Zoöl., LXIII, No. 4, August, 1919, pp. 166-167.) Change to subgeneric rank rejected. (Cf. Oberholser, THE AUK, XXXVI, No. 4, October, 1919, p. 557.)

Nettion carolinense (Gmelin) vs. ***Nettion crecca carolinense*** (Gmelin). Proposed reduction to a subspecies (Cf. Committee Brit. Ornith. Union, List Brit. Birds, ed. 2, 1915, p. 171) rejected. (Cf. Oberholser, THE AUK, XXXVI, No. 1, January, 1919, p. 81-82.)

****Netta*** Kaup considered not generically separable from ***Nyroca*** Fleming. (Cf. Millais, British Diving Ducks, I, 1913, p. 4.)

****Limnocinclus*** Gould = ***Pisobia*** Billberg. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 266.)

****Erolia ferruginea chinensis*** (Gray) = ***Erolia ferruginea*** (Brünnich). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 250-255.)

¹ Eliminations from the A. O. U. Check-List, the Sixteenth Supplement, the First, Second, Third, and Fourth Annual Lists are designated by an asterisk (*). Generic (and subgeneric) names so marked are merely discontinued in both generic and subgeneric sense, while the species included under them remain in the lists.

- ***Vetola** Mathews = **Limosa** Brisson. (Cf. Wetmore, Bull. Mus. Comp. Zoöl., LXIII, No. 4, August, 1919, pp. 180-182.)
 - ***Leucopoli** Bonaparte = **Charadrius** Linnaeus. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, p. 114.)
 - ***Arenaria interpres oahuensis** Bloxham = **Arenaria interpres interpres** (Linnaeus). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, VIII, June 26, 1919, pp. 46, 51.)
 - Astur** Lacépède vs. **Accipiter** Brisson. Proposed elimination of **Astur** as a genus (cf. Hartert, Vögel paläarkt. Fauna, Heft IX [Band II, Heft 3], October, 1914, pp. 1145-1151) rejected. (Cf. Swann, Synop. List. Accip., I, July, 1919, p. 19.)
 - ***Brewsteria** Maynard = **Archibuteo** Brehm, because not separable even as a subgenus. (Cf. Oberholser, THE AUK, XXXVI, No. 3, July, 1919, pp. 420-421.)
 - ***Bubo virginianus neochorus** Oberholser = **Bubo virginianus heterocnemis** (Oberholser). (Cf. Noble, Bull. Mus. Comp. Zoöl., LXII, No. 14, March, 1919, p. 551.)
 - Dryobates pubescens microleucus** Oberholser vs. **Dryobates pubescens medianus** (Swainson). Proposed elimination (Cf. Noble, Bull. Mus. Comp. Zoöl., LXII, No. 14, March, 1919, p. 552) rejected. (Cf. Cory, Zoöl. Series, Field Mus. Nat. Hist., XIII (Pub. 203), Dec. 31, 1919, p. 490.)
 - Acanthis** Bechstein vs. **Carduelis** Brisson. Proposed merge (Cf. Hartert, Pract. Handbook Brit. Birds, pt. I, 1919, pp. 50, 59-61) rejected. (Cf. Hellmayr and Laubmann, Nomenclator Vögel Bayerns, 1916, p. 2.)
 - Spinus** Koch vs. **Carduelis** Brisson. Proposed merge (cf. Hartert, Pract. Handbook Brit. Birds, pt. I, 1919, pp. 50, 54) rejected. (Cf. Hellmayr and Laubmann, Nomenclator Vögel Bayerns, 1916, pp. 2-3.)
 - ***Passerculus rostratus sanctorum** Ridgway = **Passerculus rostratus guttatus** Lawrence. (Cf. Oberholser, Ohio Journ. Sci., XIX, No. 6, April (May), 1919, pp. 349-351.)
 - ***Toxostoma redivivum pasadenense** (Grinnell) = **Toxostoma redivivum redivivum** (Gambel). (Cf. Oberholser, THE AUK, XXXV, No. 1, January, 1918, pp. 52-54.)
- U. S. Biological Survey, Washington, D. C.*

GENERAL NOTES

A Loon (*Gavia immer*) Caught on a Fishing Line.—November 17, 1918, Mr. Fred Lynn, of Branchport, caught a female Loon while trolling for bass in Lake Keuka. He had just felt his line ease up when the Loon broke water about a hundred feet behind and began to shake its head. At the same time he thought that he had a bite and began to pull in his line when he saw at once that he had "hooked" the Loon. It had swallowed the bait, a minnow, which was on a small Kinzie hook and in its struggles got tangled in the line and was landed with difficulty. As soon as it was landed in the boat it struggled and set up a great cry. It was impossible to dislodge the hook so Mr. Lynn cut the line as far down the Loon's neck as possible and gave the Loon to Mr. Albert Boyd who lived nearby. Mr. Boyd kept it just one day, then returned it to the lake. It dived at once and after coming up way out in the lake was last seen swimming rapidly away. Both Mr. Lynn and Mr. Boyd are well known to me and I vouch for the truth of the above.—VERDI BURCH, *Branchport, N. Y.*

Intestinal Cæca in the Anhinga.—Intestinal cæca in *Anhinga anhinga* seem subject in different individuals to variation in development, so that there has been some discrepancy and uncertainty in descriptions of them. In the following note is given a brief account of a few specimens that I have examined with some discussion of observations made by others.

In an immature male Anhinga, hatched in the National Zoological Gardens, that died when about six months old from the effects of an ill-advised meal of sand, I found two cæca, each about four mm. long. They were developed as small nodules partly embedded in the wall of the intestine, 125 mm. from the anus. While both cæca were well-formed, firm, and rounded, the one on the right side was slightly larger than the one on the left. From the inside these blind-guts appeared as shallow pockets in the intestinal wall with their inner, anterior margins somewhat thickened, more opaque in color than the surrounding tissue and perceptible as slight projections to the sense of touch. The right-pocket was about one millimeter deep while the left one was slightly less.

The intestine (preserved in formalin) of another bird collected by Francis Harper in the Okefinokee Swamp had two cæca, one of which represented merely by a slight, thickened ridge in the intestinal wall. A third specimen—an adult male that I killed in the mangrove swamps behind Cape Sable, Florida—when examined in the flesh had two cæca barely indicated as slight thickenings in the intestine that were almost imperceptible from the outside. The lower part of the intestine of this bird was placed in alcohol at the time but now shows no indication of the cæca even when examined minutely with the aid of a low power mag-

nification under a dissecting microscope. Another bird that I have seen had the cæca represented by small, slightly thickened ridges that would have been overlooked without careful search.

Several notes on the cæca of the American Anhinga have appeared in print previously. Garrod¹ remarks that there was one cæcum present, as in herons, in specimens that he dissected. In a second communication² he confirms his previous observation, stating that in this species he found no trace of a second cæcum. Forbes³ notes that normally he found one cæcum but that in one individual there was in addition to a single cæcum of the ordinary size a much more rudimentary one developed on the other side of the intestine. While in another paper⁴ he says that "it is not unusual . . . in a group of birds in which the cæca are of small size, and probably of no physiological importance, to find specimens or species with the normal number of cæca reduced by one. I may give as instances . . . *Plotus anhinga* amongst the Steganopodes." Beddard⁵ records one cæcum in some specimens of the Anhinga while in others he notes that there were two. Mitchell⁶ found only one vestigial cæcum in a bird that he examined.

From this it would appear that as Forbes has supposed the intestinal cæca in this species are not functional; and that they are on the road to disappearance. One cæcum often seems to be larger than the other, while the second may be vestigial. It is my belief, from my own observations, that some indication of this second one may be found if the gut is examined while fresh or after preservation in some fluid that causes rapid hardening. It would seem that at times this rudiment may be imperceptible in specimens dissected from alcohol or that it may be overlooked without minute search for it. It is possible that cæca are more prominent in young birds and that one or both of them may decrease in size with age.—ALEXANDER WETMORE, *Biological Survey, Washington, D. C.*

On the Nesting of the Black Duck in Ohio.—In regard to the article in the last number of 'The Auk' on this subject by Mr. E. A. Doolittle, I would like to state that the species formerly nested quite frequently at the Grand Reservoir here in western Ohio, especially at two places, where the Big and Little Chickasaw creeks empty into the Reservoir. Mr. Doolittle quotes my article in 'The Auk', January, 1910, but evidently overlooked my record for the recent nesting of this duck in the spring of 1911, as recorded in 'The Wilson Bulletin,' December, 1912, page 198, which is a good and reliable record. Writers on Ohio birds

¹ Proc. Zool. Soc. London, 1876, p. 344.

² Proc. Zool. Soc. London, 1878, p. 681.

³ Proc. Zool. Soc. London, 1882, p. 210.

⁴ Voy. of Challenger, Zool., Vol. IV, Pt. XI, 1882, p. 22.

⁵ Structure and Classification of Birds, 1898, p. 403.

⁶ Trans. Linn. Soc. (London), Zool., Ser. 2, Vol. VIII, p. 192.

will do well to consult the pages of 'The Wilson Bulletin' before rushing into print.—W. F. HENNINGER, *New Bremen, Ohio*.

The American and European Widgeons in Massachusetts.—In 'The Auk' for April, 1911, in writing of ten years' observations on migrating ducks at Wenham Lake, Mass., I reported four occurrences of the European Widgeon (*Mareca penelope*) and suggested that this species is probably more common than is usually supposed.

Those records ended with the year 1909, and since then I have accurate notes for nine additional years at the same place, a series of nineteen years in all. In 1911 no shooting was done and no records kept.

During those nine years seven more specimens of *M. penelope* have been taken among only seven specimens of *M. americana*, as follows:

1910—*M. americana*, 1.

1912—*M. americana*, 3; *M. penelope*, 1, on October 24.

1913—No Widgeon taken.

1914—*M. americana*, 0; *M. penelope*, 2, on November 21.

1915—No Widgeon taken.

1916—*M. americana*, 3; *M. penelope*, 4, October 20 and November 2.

1917—No Widgeon taken.

1918—No Widgeon taken.

1919—No Widgeon taken.

Total for the nine years—*M. americana*, 7; *M. penelope*, 7.

Total for 19 years—*M. americana*, 59; *M. penelope*, 11.

All specimens of the European species were in female plumage and showed both the typical rusty coloring of the head and the dark gray axillaries. It is very likely that some specimens of *M. penelope* were classed as *M. americana* in the early years of shooting at Wenham, before the diagnostic value of the axillars was learned.

On November 14, 1919, I noted one specimen of *M. penelope* hanging up in a duck blind on the south shore of Great Bay in the town of Greenland, N. H., not far north of the Massachusetts state line. This bird was also in female or in immature plumage. I was told that a small flock of twenty or thirty Widgeon had been feeding in Great Bay for several days, but this was the only one that had been shot. At Squibnocket Pond, Chilmark, Mass., which is situated at the southwest corner of Martha's Vineyard Island, out of 120 Widgeon taken between October 22 and December 10, 1919, one fine male of *M. penelope* was shot November 6. I examined all these Widgeon very carefully myself.

On December 8, 1919, I watched another full plumaged male *M. penelope* through a glass at close range, among a raft of many hundred Widgeon and Red-heads at Squibnocket.

It certainly seems that among the rare straggling Widgeon which appear irregularly east of Boston, at Wenham, *M. penelope* is at least relatively more abundant than among the Martha's Vineyard birds. Can it be

that *M. penelope* comes mostly down the coast from the northeast, perhaps from Greenland, while our *M. americana* arrives from the West? This would explain the apparent increase of the European bird by continuous increments from some far northeastern breeding ground.

It is also remarkable that we have never noted a full plumaged male Widgeon, either *americana* or *penelope*, at Wenham Lake, whereas at the "Vineyard" full plumaged males are much in evidence as early as mid-October. Probably those individuals occurring east of Boston, at Wenham, are young birds of the year which are much more likely to straggle beyond their regular migration route; the normal range of *americana* reaching only to Martha's Vineyard.

It may be worth while to note here that the American Widgeon, which is generally considered an irregular and scarce migrant all over Massachusetts, is really a very common duck on the south shore of Martha's Vineyard Island, frequenting Squibnocket and Black Point ponds as well as Poucha Pond on Chappaquiddick Isle.

The first *M. americana* arrived this year (1919) at Squibnocket on August 31 (six or eight birds). By September 15 there were thirty in the pond and on the 21st about seventy-five. During October the numbers increased to 1500 or 1800 and at times in November to possibly 2000. They never spend the night in Squibnocket but fly to other and better feeding grounds at dark. This body of Widgeon usually remains, so I am told, until driven out by ice.—J. C. PHILLIPS, *Wenham, Mass.*

Whistling Swan (*Olor columbianus*) in Massachusetts.—On November 6, 1919, I saw a flock of seven swans at Squibnocket Pond on Martha's Vineyard Isle, in the town of Chilmark, Mass. They were still in the pond on the following day and residents told me they had already been there several days when I first saw them. They left on November 10 or 11.

This is the largest flock of Whistling Swans that I recall for Massachusetts, most of the records having been for single birds. Mr. John E. Thayer received two swans from this same pond in 1906, shot on November 28 and 29. Three swans were observed at Squibnocket within the past few years, but I have not the exact date. This pond has a good supply of Widgeon grass and musk grasses, with some wild celery, and could probably furnish good feeding ground for swans.

So far as I know these seven swans were not persecuted and left for the south in as good condition as when they arrived. The recent marked increase of the Whistling Swan in Currituck Sound, N. C., where it is said to be doing considerable damage to ducking property, may account for its more frequent occurrence in Massachusetts.—J. C. PHILLIPS, *Wenham, Mass.*

Habits of the Two Black Ducks, *Anas rubripes rubripes* and *Anas rubripes tristis*—This past autumn of 1919, while shooting at

Squibnocket Pond, Chilmark, Mass., a very interesting fact was brought to light, namely, that no Red-legged Black Ducks resort to this region, and this experience was so different from that to which we are accustomed in any of the eastern Massachusetts ponds, where Black Ducks are shot through the entire season, that it seemed worth while to record it. It is of especial interest because it brings out the different habits of the two forms.

The south shore of Martha's Vineyard Isle consists in the main of a chain of fresh, brackish, and salt ponds, separated from the sea by a beach. There are no salt marshes proper, and no tidal flats off the shore. In many of these ponds there is excellent feeding ground for diving ducks, but not much shallow ground for surface feeders. Nevertheless a goodly number of Black Ducks resort to Squibnockett, using it as a day-time refuge, and fighting to small sloughs scattered through the pastures and uplands at night. Squibnocket is entirely fresh. The ducks have been systematically baited there for many years and a number of pairs breed. On August 20 last there were some 250 to 300 Black Ducks and on September 15 this number had not increased greatly. On September 20 some 600 were counted and by early October they had about doubled. After the 10th of October it did not appear that there was any increase; and the same number persisted until driven away by the big freeze of December 12, 13, and 14, 1919.

Black Ducks were shot on the following dates: September 23, 24; October 14, 22; November 6, 7, 14, 21, 25; December 1, 4, 7, 8, 9, 10. In all, 224 were taken during the season, and all of these, except 28, I examined personally. There was no marked change in the appearance of these ducks as the season advanced. In some of the males the color of the legs increased slightly in richness, but never approached the coral red of *rubripes*. No other *rubripes* characters were noted. The average weight of the males in mid-October was 2.86 pounds and the females averaged 2.43 pounds. By December 10 these weights had increased to 3.24 in the males and 2.66 in the females, a very high average, induced no doubt by artificial feeding.

This body of birds became almost sedentary in its habits as the season advanced, and when not disturbed they spent almost the entire day asleep on the beaches at the west end of the pond. Even when greatly disturbed they seemed loth to go to sea, although it meant a flight of only a couple of hundred yards. They seldom remained long in the ocean. At night many of these ducks resorted to small bog holes scattered through the pastures, up to the time when ice made this impossible.

It is fair to presume that nearly all these ducks would have passed south early in the season if they had not been attracted and held by grain. The absence of the tidal flats and marshes of course explains the non-appearance of *rubripes*, but that there should be such a sharp line of demarkation between the two forms at any one place seemed hardly possible.

The habits that characterize the two forms as they appear in autumn in New England may be thus summed up: *Anas rubripes tristis*: Breeding locally and often migrating as early as, or before, mid-September, or at least "shifting ground" from inland nesting grounds to better feeding grounds near coast. Feeding in both ponds and salt meadows, but if in salt meadows resorting to fresh water once or twice a day. Much less nocturnal in feeding habits than *rubripes*, because less shy, and much less inclined to spend day on open ocean. Prefers good fresh water and brackish water food, but spends the winters on the coast of New England in small numbers, along with *rubripes*. Reaches great size at times. Largest male 3 pounds 10 ounces; largest female 2 pounds 15 ounces (Squibnocket, 1919). More difference in size between sexes than in *rubripes*! Comes readily to live decoys, no matter how extreme the voice may be (too high or too low); and is more loquacious than the red-legged form.

A. rubripes rubripes: Late migrant, never becomes localized except near sea, and where marine food in the form of small mollusca is abundant. Very seldom resorts to small ponds or bogs, but likes large open sheets of fresh water near ocean, to which it often makes daily trips to drink and rest, but not to feed. Is better able to sit off-shore in rough seas; and in general appears a more rugged bird with heavier feathering and superior resistance to extreme cold. In winter, it does not depend on ponds for fresh water, but obtains a sufficient supply in small springs about salt meadows at low tide.

This is a much more wary bird, is more silent itself, and comes less easily to live decoys, towards which it manifests an instinctive fear, especially if they be loud or shrill callers. In the salt meadows the best gunners prefer sea-weed bunches or canvas sacs, and find the live decoys useless, especially late in the season.

When a flock of *rubripes* alights on a pond near a shooting stand, they nearly always keep at a safe distance until perfectly satisfied of their surroundings. Then, more often than not, they will swim away from the stand and its live decoys. If they approach the stand, which they do with the utmost caution, and with necks erect, they are not apt to keep closely together as *tristis* does.

Extreme weights not much above that of *tristis*. Heaviest male noted by myself, 3 pounds 12 ounces. Average is a good deal heavier than *tristis*, females perhaps more nearly size of males than in *tristis*, but no figures at hand to bear out this point.—J. C. PHILLIPS, *Wenham, Mass.*

Flight of Water-fowl at Washington, D. C.—On February 24, 1920, an unusual flight of water-fowl, bound in a southerly direction and flying at an altitude of probably one thousand feet, passed over Washington. During the following three days we experienced the coldest weather of the winter, the thermometer hovering about the 13 degree mark.

On February 7, with the temperature at 15 above zero, a flock of five Canada Geese passed over the city and alighted in East Potomac Park. The wind on that day at times attained a velocity of forty-five miles an hour.—BRENT M. MORGAN, 224 Eleventh St., S. W., Washington, D. C.

Nesting of the Greater Yellow-Legs in Newfoundland.—On June 20, 1919, Mr. J. R. Whitaker and the writer had the satisfaction of discovering a female of this species (*Totanus melanoleucus*) brooding four young just out of the shell and still in the nest, in a large bog in the vicinity of Grand Lake, N. F. Led to the spot by the ever increasing cries of the male bird, the nest, which was nothing more than a bare depression ten inches in diameter and three inches deep, upon the top of a mound of peat otherwise covered over with a short growth of sheep laurel, was noticed three yards from where we had stopped in doubt as to where next to proceed.

It presented an unusual domestic picture; one youngster was perched on the mother's back, while one or two others appeared from under her wings after the manner of domestic fowls. The parent remained until we closed in, when she flew low from the nest with a piercing cry, and after circling about overhead took up a position on a dead stub nearby, from which she continued to *kip, kip, kip, kip*—incessantly as long as we remained near the nest, the male likewise calling and circling above.

The young, whose legs were not as yet strong enough to bear their weight, lay flat in the nest. They were mottled in gray, brown and black down, white below. Some of the lighter spaces on the back tending toward buffy. The eyes were large and black, bill one-half an inch long, lead-black in color, while the legs were characteristically long and greenish in color. Notwithstanding the recent hatching of the eggs, only one or two small pieces were to be found, the empty shells doubtless having been carried away by the parents.

On visiting the nest the day following, the young could not be found, although the actions of the old birds indicated their presence in the vicinity.—GEORGE H. STUART, 3rd, Girard Trust Co., Philadelphia.

Nesting of the Little Black Rail in Atlantic County, N. J.—On July 4, 1919, Mr. Julian K. Potter and the writer flushed a small rail in a marsh an acre or two in extent, beyond the sand dunes immediately back of the ocean beach, on an island below Beach Haven, N. J. Searching for the nest in the belief that the bird was a Little Black Rail, we were rewarded by finding it placed among the long grasses, the tops of which were so drawn over as to almost completely hide the eggs from view. The nest, which was composed entirely of the same rather fine grass, was placed about one inch above the damp ground and contained eight eggs, very heavily incubated.

On returning several times at intervals of ten minutes we had opportunities of observing the female on the nest, her bright red eyes being the most prominent feature. On each occasion when leaving the eggs, she darted from the nest into the surrounding grass, never taking wing, and with such celerity that it was impossible to observe her movements, the action resembling more that of a mouse than a bird.

Eventually she was seen and caught in the hand while moving through some shorter grass. Mr. J. Fletcher Street secured some excellent photographs of the bird while thus held. On being released, the bird again disappeared into the grass by a similar dart as before, never at any time showing the slightest indication of wing power. The first bird, flushed some ten yards from the site of the nest, was doubtless the male, forced to fly because of insufficient cover when surprised.—GEORGE H. STUART, 3rd, Girard Trust Co., Philadelphia.

Maggots in the Ears of Nestling Cooper's Hawks (*Accipiter cooperi*).—On July 8, 1913, when examining three Cooper's Hawks seventeen days old, I found maggots in their ears and took a maggot from each ear of the three birds. In one ear of one of the birds there was another maggot which I could not get as it went far back into the ear. Possibly these maggots were the larvae of the Screw-worm Fly (*Campsomyia macellaria*). I visited these birds again July 20, when their ears appeared to be quite normal.—VERDI BURTCH, Branchport, N. Y.

Age Attained by the Hyacinth Macaw.—A venerable specimen of the Hyacinth Macaw (*Anodorhynchus hyacinthus*) well known to the visitors to the Philadelphia Zoological Gardens, died on February 28, 1920. The records of the Zoological Society show that the bird was received on July 22, 1893, so that it had been on exhibition in the bird house for over twenty-six years. How long the bird had lived before it was captured it is of course impossible to say. At the time of its death it was still in perfect plumage.—WITMER STONE, Academy of Natural Sciences, Philadelphia, Pa.

Curious Habits of the Whip-poor-will.—Mr. Moritz Boehm, a neighbor of mine, has a very beautiful place surrounded on two sides by a deep ravine. Each year for the past six or seven seasons a pair of Whip-poor-wills have spent the summer on his grounds, and have become quite tame. The male has certain stands around the house, and comes up from the depths of the ravine at night and calls, first from one perch, then another, until he has gone around the house several times, usually answered by Mr. Boehm. On different occasions, while the male was calling, he saw the female going through some peculiar antics, but in the dusk could not make out just what she was doing. One evening, when he was sitting

on the lower step, the birds came up and performed within ten feet of him. He kept perfectly quiet. The male called from a low branch overhead, while the female strutted on the gravel path below, with wings and tail outspread and head lowered, and sidestepped back and forth, half way around to the right, then to the left, all the time uttering a curious guttural chuckle. This performance was kept up for ten or fifteen minutes.

One morning he saw them sleeping on a log. They were sitting close together facing each other, their heads about half way along side of one another, while each had one wing spread over the other's head. This male bird had a peculiar call which could be recognized from the other Whip-poor-wills which were heard in the woods nearby, and Mr. Boehm, who is a close observer of nature, is quite sure that the same pair come to visit him every summer.—HENRY K. COALE, *Highland Park, Ill.*

***Aeronautes melanoleucus* (Baird) versus *Aeronautes saxatalis* (Woodhouse).**—The White-throated Swift of western North America is commonly called *Aeronautes melanoleucus* (Baird) (*Cypselus melanoleucus* Baird, Proc. Acad. Nat. Sci. Phila., VII, June, 1854, p. 118; "Camp 123, west of San Francisco Mountains" [on Bill Williams River, west of Ives Peak, Lat. 34° 15' N., Arizona]). As is well known, there is an earlier name in *Acanthylis saxatalis* [sic] Woodhouse, in Sitgreaves' 'Report of an Expedition down the Zuni and Colorado Rivers,' 1853, p. 64, based on a bird seen at "Inscription Rock, New Mexico." This name has been rejected chiefly because no specimen was obtained and because the description given was not entirely accurate. This description is as follows:

"Head and rump white; back, tail, wings, and sides black, beneath white; upper tail coverts black; under coverts white; about the size of *A. pelagica*, and in its mode of flight the same."

The chief discrepancies in this account are the statements that the head and rump are white, and that the under tail-coverts are white. Any one who has seen this species in life, however, will readily recall that when the bird is flying the white flank patches spread out both above and below, so that the rump and even the under tail-coverts also, have all the appearance of being white, which circumstance readily explains these two discrepancies in Woodhouse's description of a bird seen in flight. The head is in some individuals very light colored, and in certain lights might readily at a distance appear superficially white. There can be no doubt at all that the White-throated Swift was the bird seen at Inscription Rock by Dr. Woodhouse and described as above; and this most writers on the subject readily admit. Furthermore, there is no rule of nomenclature that provides for the rejection of a name based on the printed description of an animal only seen in life, nor for the rejection of a name if certainly identifiable even though the description be partly inaccurate. We see, therefore, no reason for not hereafter calling our White-throated Swift

Aeronautes saxatalis (Woodhouse).—HARRY C. OBERHOLSER, *Washington, D. C.*

A New Name for *Phaeochroa* Gould.—The name of the genus of Trochilidae now known as *Phaeochroa* Gould (Introduct. Troch., 1861, p. 54; type, *Trochilus cuvierii* De Lattre and Bourcier) proves to be preoccupied by *Phaeochrous* Laporte de Castelnau (Hist. Nat. Ins., II, 1840, p. 108), a genus of Coleoptera. As it seems to be generically separable from *Aphantochroa* Gould and appears to possess no synonym, we propose to call it *Bombornis* (βόμβος bombus; ὄρνις avis) nom. nov., with *Trochilus cuvierii* De Lattre and Bourcier as type. The following species are referable to this genus:

Bombornis cuvierii cuvierii (De Lattre and Bourcier).

Bombornis cuvierii saturator (Hartert).

Bombornis roberti (Salvin).—HARRY C. OBERHOLSER, *Washington, D. C.*

Great Crested Flycatcher in Massachusetts in Winter.—On December 8, 1919, at Nahant Beach, Mass., I found a Great Crested Flycatcher (*Myiarchus crinitus*). The bird was in apparently good condition and quite tame. When alarmed at my close approach it seemed reluctant to leave the immediate vicinity and allowed me to observe it at close range. On the beach, where I first flushed it, was a mass of kelp, washed up by the tide, and covered with hundreds of black insects the size of a common fly. When I walked by, the insects rose in clouds covering my clothes. Upon these insects the bird was feeding, catching them from its perch on the rocks or from a wooden fence that runs along a walk near the beach. It would be interesting to know whether or not it will survive the winter.—CHARLES B. FLOYD, *Auburndale, Mass.*

The Song of the Boat-tailed Grackle.—During a six weeks' trip through central and eastern Florida in January and February, 1917, the writer had numerous opportunities to improve acquaintance with this distinctive grackle (*Megaquiscalus major major*). Here its range is not strictly maritime (as it appears to be elsewhere along the Atlantic Coast from Georgia to Maryland), for it makes its home also about the many bodies of fresh water throughout the interior of the state as far north as the vicinity of Gainesville. It is known everywhere to Florida people as the 'Jackdaw,' a name probably adopted and handed down by the early settlers because they saw in this species some slight similarity to the Old-World Jackdaw (*Colæus monedula*), a small representative of the family Corvidae. The females differ so much in size and color from the resplendent males that they have gained, here and there, a separate appellation; in the Kissimmee region, for instance, they are said to be called 'Cowbirds.'

In view of the lack of any intensive study of the Boattail's life history, it is perhaps not surprising that a certain deceptive feature of its song has failed to be generally understood.

The species was in full voice as early in the season as January 20, at Mayport. Here some males were perching in a live-oak and uttering their not unpleasing notes, which suggested somewhat a European Starling's medley. On Merritt's Island, where I found small numbers of these birds on February 19, I began to pay close attention to the male's musical performance, and more particularly to that part of it which Chapman describes as "a singular rolling call, which bears a close resemblance to the sound produced by a Coot in pattering over the water."¹ A male, which was sitting on a stake in the marsh and indulging persistently in its curious song, furnished a convenient subject for observation. The song seems to vary in length with individuals, but one performance that I heard to particular advantage (this was at Sebastian, a few days later) might be rendered as follows: *kip, kip, kip, kip-kip-kip-kip-kip-kip-kip, chrrr, chrrr, chrrr, chrrr, chrrr, chrrr, pt-pt-pt-pt-pt-pt-pt*. The first part consists of a succession of simple, short *kips*, the first few given more slowly than the rest; the second part, of rolling, guttural *chirrings*; and the third part, of the sound described by Chapman. I noticed that when the bird reached the final part of its song, it vibrated or slightly fluttered its wings, so that their tips appeared to strike either together or against the upper side of the tail. At the same time the bill had the appearance of partly closing. I therefore concluded that the sound was not vocal, but wing-made; and a number of subsequent observations strongly confirmed me in this opinion.

It was not until my last morning in Florida (at Fernandina, February 27) that I was undeceived. I then had an excellent view of a bird that was walking over the muddy shore, and saw that its wing-tips did not touch during the final part of the song, though they vibrated a little. A little later another bird, perched on a telephone pole, did not appear to vibrate its wings at all during the song. I could plainly see the bill in a sort of rattling motion, however, and finally realized that it was the rapid striking together of the mandibles that produced the sound suggestive of that which a Coot makes in pattering over the water.

On my return from the field I was interested to find that the few published accounts of this feature of the song disagree as to the manner in which it is produced. Mr. Arthur T. Wayne writes that "the males . . . perch upon a limb of some tree and with their wings make a loud rolling sound. This peculiar noise is also made while the birds are flying."² Bradford Torrey, in his delightful 'Florida Sketch-book,' has given so apt an account of the Boattail and its music that it seems worth

¹ Handbook of Birds of Eastern North America, 1912, p. 368.

² Birds of South Carolina, 1910, pp. 112-113.

while to quote at length from this gifted observer and interpreter of bird ways:

"He opened his bill—*set* it, as it were, wide apart—and holding it thus, emitted four or five rather long and very loud grating, shriekish notes; then instantly shook his wings with an extraordinary flapping noise, and followed that with several highly curious and startling cries, the concluding one of which sometimes suggested the cackle of a robin. All this he repeated again and again with the utmost fervor. . . . The introduction of wing-made sounds in the middle of a vocal performance was of itself a stroke of something like genius. . . .

"That the sounds *were* wing-made I had no thought of questioning. . . . Two days afterward, nevertheless, I began to doubt. I heard a grackle 'sing' in the manner just described, wing-beats and all, while flying from one tree to another; and later still . . . I more than once saw them produce the sounds in question without any perceptible movement of the wings, and furthermore, their mandibles could be seen moving in time with the beats. . . .

"If the sounds are not produced by the wings, the question returns, of course, why the wings are shaken at just the right instant. . . . The reader may believe, if he will, that the bird is aware of the imitative quality of the notes, and amuses itself by heightening the delusion of the looker-on. My own more commonplace conjecture is that the sounds are produced by snappings and gratings of the big mandibles . . . and that the wing movements may be nothing but involuntary accompaniments of this almost convulsive action of the beak. But perhaps the sounds *are* wing-made, after all."¹

The first, second, and third parts of the song, as described by Torrey, correspond, respectively, to what I have considered the second, third, and first parts. In view, however, of the continuous nature of the Boattail's performance, almost any part of the song might be taken as the first.

Mr. Alexander Wetmore tells me that his observations on the species at Punta Gorda in early February, 1919, fully support the conclusion that the pattering sound is produced mechanically by the mandibles.—FRANCIS HARPER, *Biological Survey, Washington, D. C.*

Clark's Crow in Denver.—The undersigned saw, to his amazement, a pair of Clark's Crows (*Nucifraga columbiana*) flying over the city well within the residential district on December 7, 1919; the region of Denver had had, previous to this date, two spells of zero weather, and whether the extreme cold caused these unusual visitors to our city it is hard to determine. This is the first occasion that I have seen this crow so far away from the mountains of our neighborhood, and the first time in Denver.—W. H. BERGTOLD, *1121 Race St., Denver, Colo.*

¹ A Florida Sketch-book, 1894, pp. 108–110.

Another Occurrence of a Starling Near Montgomery, Ala.—On Sunday, January 4, 1920, two gentlemen from Montgomery, while hunting at the mouth of the Coosa and Tallapoosa Rivers, and near old Fort Toulouse, noted a large flock of what they thought to be Waxwings. As they looked rather large, however, they fired one shot to settle the question, killing two birds, which proved to be Starlings (*Sturnus vulgaris*). They estimated the number to have been conservatively from 150 to 200, and noted two other small flocks of from eight to twelve birds later on during the day. They think, however, that these two last named groups were from the original flock which had alighted in a tree, and which they later in the day saw feeding in the neighborhood.

I was presented with one of the birds, which proved to be a male. The other one killed had been picked before I learned of its having been killed. The male has been mounted, and presented to the Museum of the State Geological Survey at Tuscaloosa.

This is the second occurrence in the past two years of the Starling near this city, the other one having been reported by me in 'The Auk' for April, 1918. It was killed on the night of January 14, 1918.—PETER A. BRANNON, *Montgomery, Ala.*

A Flight of Newfoundland Crossbills.—Apparently the cone crop in Newfoundland has been a failure this season and, on account of the scarcity of food, the resident Crossbills have been induced to wander far in search of food. I have had five specimens of *Loxia curvirostra perna* sent to me in the flesh from Chathamport, Mass.; Mr. Harry T. Hathaway has sent me three from Rhode Island; and Mr. Alexander Wetmore has sent me one from Virginia. These specimens, which are all typical *perna*, indicate an extensive flight of this subspecies. It would be interesting if other observers elsewhere would be on the lookout for this subspecies and report them, so that we can determine the limits of this rather unusual flight and learn how universal it is and how abundant the birds are.

Loxia curvirostra perna is easily distinguishable, even in life, from *Loxia curvirostra minor*, with which it seems to be associated in this flight, by its decidedly larger size and by its much longer and heavier bill. I should be glad to identify any specimens that may be sent to me for determination.—A. C. BENT, *Taunton, Mass.*

Evening Grosbeak at Valley Falls, N. Y.—On January 20, 1920, a flock of Evening Grosbeaks appeared in town. They were first seen near the public school and later I counted twelve feeding on the seeds of a sugar maple in my front yard. They uttered a single sweet note from time to time and seemed little disturbed by persons passing by. A few days later a single female was seen in the same tree. I saw her break off a twig at least an inch long and apparently devour it whole.—GRACE YOUNG BOWEN, *Valley Falls, N. Y.*

Evening Grosbeak at Brantingham, Lewis Co., N. Y.—Early on the morning of May 20, 1916, Mr. C. F. Stone and myself saw a female Evening Grosbeak in the woods near the hotel at Lake Brantingham. When first seen it was on the ground where it soon picked up a small twig in its bill, flew with it up into a beech tree, and we had hopes of finding the nest. However the twig did not seem to suit, as it was soon dropped to the ground and the Grosbeak flew off through the woods and we could not again locate it.—VERDI BURTON, *Branchport, N. Y.*

The Evening Grosbeak in Monte Vista, Colo.—In order to add to the fullness of the records concerning the great wave of Evening Grosbeaks (*C. vespertina*) which seemed to have been widespread over a large part of the United States this winter, the following notes are here recorded: The Western Evening Grosbeak (*C. v. montana*) was first seen in Monte Vista, this year, on October 17, there being three females. They were eating buds from the willow trees in my yard. On October 21, a flock of more than twenty-five males and females was noted in the yard. Many more were seen thereafter, from October 24 to October 28, inclusive. They left the vicinity of my house on October 28, just before a severe snowstorm, which occurred the next day. These birds seemed to prefer the buds of willow trees, and it also seemed to me that at first the males and females kept apart, though the sexes mingled later on; the females arrived first. Because of their extraordinary tameness they could be studied at close range and to great advantage, hence the relative ease in determining the sexes.—MRS. JESSE STEPHENSON, *Monte Vista, Colo.*

Some Sparrow Notes from Madison, Wisconsin.—On May 17, 1919, I collected a typical specimen of Gambel's Sparrow (*Zonotrichia l. gambelii*) in the vicinity of Madison. My identification was later affirmed by Dr. Oberholser. The bird was unaccompanied by any other sparrow. A point of passing interest may lie in the fact that I obtained this spring only one record, May 4, of the White-crowned Sparrow (*Z. leucophrys*) during the course of forty extensive field trips. The status of *Z. l. gambelii* in the middle-western states, east of the Mississippi, follows: There are no records for Ohio through 1919 (Lynds Jones), for Indiana through 1897 (Butler), for Michigan through 1912 (Barrows), or for Illinois through 1909 (Cory). For Wisconsin a typical specimen dated April 20, 1871, was taken by Dr. Hoy, and a further entry in the Kumlien-Hollister State List adds, "Specimens have been taken a number of times about Lake Koshkonong which are almost, if not quite, typical *gambelii*."

The writer has two spring observations to record of Le Conte's Sparrow (*Ammodramus leconteii*), both singing males from the vicinity of Madison. The birds in each case were relatively easy of approach, in moist prairie fields, and were studied under ideal conditions. The first sparrow was observed while the writer was in company with Norman DeW. Betts on

April 16, 1916; the second by the writer alone on May 10, 1919. There are apparently no other spring records for Wisconsin, only one record—time of year not stated—for Michigan, while most of those from Illinois seem to be in the fall. The writer took two specimens of the Clay-colored Sparrow (*Spizella pallida*) in a dry, shrub-covered field, remote from the city, on May 8, 1919. In the same field on May 30, a nest with three eggs was found on the ground at the foot of a bush. In May of 1918, in the same area, I recorded twenty males on May 4. This sparrow is not rare in southern Wisconsin but is eccentrically local.—WARNER TAYLOR, *Madison, Wisconsin*.

***Zonotrichia albicollis* Again in Colorado.**—Since writing 'The Birds of the Clear Creek District,' published in the last issue, the writer has had the good fortune to secure a specimen of the White-throated Sparrow, which is not only a new species for this region, but is also the fourth record for Colorado.

The specimen, C. M. N. H. No. 7490, is an adult male, and was taken in the Clear Creek Valley, Colorado, Nov. 2, 1919. It is preserved in the collections of the Colorado Museum of Natural History.—F. C. LINCOLN, *Denver, Colorado*.

The Proper Name of the West African Serin.—The bird figured and described from Cuba by d'Orbigny as *Linaria caniceps* was without any reason whatever referred by Gundlach (Jour. f. Orn., 1871, p. 276) to the Nonpareil, *Passerina ciris* (Linné), which it does not resemble in any way. Later Ridgway (Birds of North and Middle America, Part I, 1901, p. 589) includes the name, with a query, in the synonymy of *P. ciris*.

As d'Orbigny's work on Cuban birds was based in part on specimens from Cuba in the Lafresnaye collection—Lafresnaye's written labels for his specimens bearing testimony to this in more instances than one—we have had, in the course of our work on the Lafresnaye collection, to study critically all species described as new by d'Orbigny. It was at once evident to us, as soon as we saw Plate 16 of the Atlas, that it represented an African *Serinus* and not the Nonpareil. We therefore searched among the specimens of this genus in the Lafresnaye collection for one that might possibly have been the subject of this plate and found number 6785 with a label in Lafresnaye's handwriting, which reads as follows: "Crithagra chrysopyga Sw. W. af. 1. 206 pl. 17. junior? Cuba. an e Senegarabia allatus?" The specimen agrees minutely with the original description and with the plate, except that the gray of the head has faded from long exposure to direct sunlight, as a mounted bird, to a dull, dirty grayish. It is thus in all probability the type of the species.

We identify both bird and plate positively as the species which Reichenow (Vög. Afr. III, (1), 1904, p. 272) calls *Serinus hartlaubi* (Bolle).

The example was of course brought from West Africa, probably from Senegal, to Cuba, and very likely it was an escape from captivity actually taken there.

D'Orbigny's name for the Gray-headed Serinus being older than any of the other names applicable to the species, must be used instead of *S. hartlaubii*, and the species will have to stand as—

SERINUS CANICEPS (d'Orbigny).

Linaria caniceps d'Orbigny in: La Sagra, Hist. Nat. Cuba, 1840 (=1839) p. 107, Atlas pl. 16 (Cuba, escaped cage-bird—we substitute Senegal, West Africa). Type (?), M. C. Z. 83869, Lafr. coll. 6785.—OUTRAM BANGS and THOMAS E. PENARD, *Mus. Comp. Zool., Cambridge, Mass.*

The Louisiana Tanager in Massachusetts.—On December 19, 1919, Miss M. J. Sitgreaves found an adult female Louisiana Tanager (*Piranga ludoviciana*) in a dying condition in a garden in Brookline, Mass. It was taken into the house and warmed and fed by the ladies, but soon died. The weather was extremely cold at the time.

The bird was given to Prof. Roland Thaxter who brought it to the Museum of Comparative Zoology, where it was skinned and found to be fat and apparently in perfect health.

I believe this is the second record for Massachusetts, and the fourth for New England. The others are: Maine, near Bangor, about October 1, 1889; Massachusetts, Salem, January 20, 1878 (taken alive); Connecticut, New Haven, December 15, 1892. Thus three of the four New England records are of birds taken in winter.

The specimen has been transferred to the Boston Society of Natural History, where New England record specimens, so far as possible, are gathered together.—OUTRAM BANGS, *Mus. Comp. Zool., Cambridge, Mass.*

Bohemian Waxing in Illinois.—Northeastern Illinois is having a visitation of Bohemian Waxwings (*Bombycilla garrulus*) this winter. They were first noticed in Jackson Park, Chicago, by Nathan Leopold, who wrote of seeing several hundred of them on Thanksgiving day, feeding on the red berries of certain trees in the Park. The following Sunday Colin Sanborn and H. L. Stoddard went up to the pine woods along the Lake Michigan shore at Beach, about twelve miles north of here, and succeeded in taking a number of specimens. It was a very cold day with a high north wind, and flock after flock passed over, heading south. They were wild and hard to reach with fine shot. Mr. Stoddard estimated that about fifteen hundred passed over while they were in the pines. Those taken had the throats and stomachs stuffed with Juniper berries. During December numerous small flocks were seen about the town. They

would appear in a mountain ash tree or hedge of barberry or high bush cranberries, and stay several days, until every berry was eaten. Mr. Charles Douglas, of Waukegan, also reports several flocks there, and many were seen later in December by Mr. Stoddard among the sanddunes near Gary, N. W. Indiana. This is a rare bird here, and it is the first time I have ever seen it alive.—HENRY K. COALE, *Highland Park, Ill.*

The Yellow-Throated Warbler in Central New York.—A Correction.—Mr. J. T. Nichols has kindly called my attention to an omission in my note (Oct., 1919, pp. 580, 581, *The Auk*, XXXVI) on this species. The date of the record is missing. It should be May 23, 1919, and the phrase "he replied" should appear "I replied."—A. H. WRIGHT, *Cornell University, Ithaca, N. Y.*

The Louisiana Water-Thrush Breeding at Graniteville, Aiken County, South Carolina.—I am indebted to Misses Marion Jay Pellet and Louise Petigru Ford for the privilege of announcing the breeding of the above species at Graniteville, S. C. These ladies observed three young birds being fed by their parents during the early part of May, 1919. About ten years ago Mr. B. F. Taylor, of Columbia, S. C., found a nest containing eggs and the bird setting near Columbia. This breeding of the Louisiana Water-Thrush in the Lower Austral life zone is certainly surprising because Mr. Leverett Mills Loomis during all the years he spent at Chester, S. C., studying birds found this species a very rare migrant, and did not detect it breeding. In 'The Auk' (Vol. VIII, 1891, p. 172) Mr. Loomis has the following: "This species has been taken only upon three occasions, viz., Aug. 10, 1887; July 25 and 31, 1888." Chester is certainly in, or very near, the Upper Austral life zone.—ARTHUR T. WAYNE, *Mt. Pleasant, S. C.*

***Elminia* Bonaparte Preoccupied.**—The genus of Muscicapidae hitherto known as *Elminia* Bonaparte (Compt. Rend. Sci. Nat., XXXVIII, 1854, pp. 388, 652; type, *Myiagra longicauda* Swainson) is apparently in need of a new name. It is invalidated by *Elminius* King (Zool. Journ., V, 1831, p. 334) for a genus of Crustacea. As it appears to have no other name, it may stand as *Erannornis* (ἐρυννός, delicatus; ὄρνις, avis) nom. nov., with *Myiagra longicauda* Swainson as type. The species referable to this generic group are as follows:

Erannornis longicauda (Swainson).

Erannornis teresita (Antinori).

Erannornis schwebischi (Ouslaet).

Erannornis albicauda (Bocage).—HARRY C. OBERHOLSER, *Washington, D. C.*

***Toxostoma crissalis* versus *Toxostoma dorsalis*.**—The current technical name of the Crissal Thrasher is *Toxostoma crissalis*, but this apparently must be changed. The species was originally described under the name *Toxostoma dorsalis* by Dr. T. Charlton Henry from a specimen obtained by him at Fort Thorn, New Mexico. This description appeared in the number of the 'Proceedings' of the Academy of Natural Sciences of Philadelphia for May, 1858, on page 117. In the June number of the same publication, pages 117–118 of the May number were reprinted with some typographical changes. Among them the name of *Toxostoma dorsalis*, was altered to *Toxostoma crissalis*, under which name the species has since been known. In "Directions to Binder" for Volume 10 (1858) of the above mentioned 'Proceedings' there appears the following statement: "Pages 117 and 118 in the April and May numbers to be cancelled, and pages 117 and 118 at the close of the June number substituted for them." This name, *Toxostoma dorsalis*, evidently was intended to appear originally as *Toxostoma crissalis*, but the former has priority of publication. It is merely a mistake involving the use of another and entirely different word, not a typographical error, and was not corrected in the original publication, but at least a month later. Therefore, since mistakes in the original publication of scientific names can not be altered, this name, *Toxostoma dorsalis*, can not for this reason be rejected in favor of *Toxostoma crissalis*, as *Toxostoma dorsalis* is apparently not preoccupied or otherwise untenable. We must therefore call the Crissal Thrasher *Toxostoma dorsalis*.

In connection with the use of the generic name *Toxostoma*, it might be well to note that this word is not of neuter gender as currently used, but feminine, since its terminal element is an appellative noun, and, therefore, must be either masculine or feminine, whichever the original employer of the name may determine—in this case, feminine.—HARRY C. OBERHOLSER, *Washington, D. C.*

The Wheatear (*Oenanthe oenanthe leucorhoa*) in Eastern Pennsylvania.—On October 6, 1919, Mr. James R. Gillen saw a strange bird on the ground, near Lansdale, Pa., which in a general way reminded him of a Horned Lark, although he recognized it as something different. Procuring a gun, he shot it and presented it to his father, Mr. Thomas S. Gillen, who mounted it and added it to his collection. Being anxious to ascertain what sort of bird he had found, Mr. Gillen described it to me, and I at once suspected that it might be a Wheatear. Showing him a tray of skins containing some of this species he immediately picked out a female in winter plumage as the exact counterpart of the bird he had shot.

Thanks to Mr. Thomas S. Gillen, the specimen was later exhibited at a meeting of the Delaware Valley Ornithological Club, and its identity confirmed. This is the first record of the occurrence of the Wheatear

in the State.—WITMER STONE, *Academy of Natural Sciences, Philadelphia, Pa.*

Additional Notes on the Birds of Red Deer, Alberta.—In Mr. Taverner's article on the Birds of Red Deer (The Auk, 1919) he invites further information on that region, and the following notes are offered as perhaps worthy of record. They are from my own investigations on June 2 to 6, 1903, at Innisfail; June 19 to 26, 1906, at Red Deer and Innisfail; and May 30 to June 9, 1911, at Camrose and the Miquelon Lakes, fifteen miles north. The numbers are those of Mr. Taverner's list:

2, HOLLBOELL'S GREBE. In nearly every medium-sized lake, this species was found to outnumber the Western by several to one. Though in spots, the latter was the more abundant. Lakes would be frequently found with a population of Holboell's exclusively.

4, EARED GREBE. Abundant in many of the smaller lakes.

5, PIED-BILLED GREBE. Rare.

10, TERN. A species thought to be the Common, was in hundreds on the Miquelons in 1911. None were taken for identification.

HOODED MERGANSER. One seen on June 3, another on June 6, 1911, at Miquelon.

RED-BREASTED MERGANSER. One at Miquelon, June 2, 1911.

RING-NECKED DUCK. Ten seen on Wavy Lake, June 3, 1903.

35, GREAT BLUE HERON. The only spruce tree on the Pelican Island at Miquelon, June, 1911, had so many Cormorants' nests that one's clothes got very dirty in forcing through them to reach the top of the tree, where there were five nests of the Great Blue Heron. There were thirty or forty nests of the Cormorant.

PECTORAL SANDPIPER. Three.

HUDSONIAN GODWIT. One.

MARbled GODWIT, three.

All these at a little lake ten miles northeast of Camrose on June 6, 1911, also two more of the last named on May 30, 1911, near Camrose. The Hudsonian was in the spectacular cinnamon plumage which, with his long bill, made identification extremely easy.

51, BLACK-BELLIED PLOVER. One at the same place as the three above. I have also a skin taken near Edmonton on September 23, 1896.

53, HUNGARIAN PARTRIDGE. Mr. Farley informs me that this species is approaching nearer to Camrose, and it is now affording fair shooting south of Calgary, appearing to be well suited by the prairie conditions.

73, OSPREY. A nest was found at Pine Lake (a name that is of abundant occurrence in the west) twenty miles S. E. of Red Deer on June 2, 1906. The birds were feeding young, but were too wary to approach the nest while we were near. It was on a broken topped tree near the lake, about fifty feet up, and immediately below it, within six feet, a Red-breasted Nuthatch was incessantly going to feed her young.

89, RUBY-THROATED HUMMING-BIRD. One seen at Miquelon, June 2, 1911.

94, OLIVE-SIDED FLYCATCHER. Seen on two or three occasions. The presence of spruce ought to guarantee this species as a regular resident in fair numbers, and probably only a little search is needed to reveal it.

104, COWBIRD. Common, ten to seventy daily in 1911, two to five daily in June, 1903.

108, BALTIMORE ORIOLE. I have no familiarity with the notes of the Bullock's Oriole, and have failed to identify it positively, but all the orioles which I have seen well, or shot, have been the Baltimore. One to ten each day at Camrose, 1911.

110, RUSTY BLACKBIRD. About as common as the Brewer's. Several nests found in the typical location, *over water*. One was shot to make identification positive, but it was unnecessary, as I am thoroughly familiar with both species. Exceptions doubtless occur, but I have never found nests of the Rusty other than over water, and Brewer's never very near water. Mr. Taverner would appear to have duplicated Mr. Farley's note "breeding along the streams in willows." Mr. Farley does not think he said it with reference to Brewer's, and if he did, it was a slip. He only finds the Rusty beside water.

114, PINE GROSBEAK. My specimens vary in shade of color from the eastern ones, both in red and gray phases, but no stress is laid on this character in the western variety.

118, REDPOLL. A bird of extreme abundance in winter. About 1900, a pair were held in captivity at Innisfail, and laid eggs and attempted to raise young, with what success the writer is not informed. Some bird-lovers of the region are beginning to leave some pig weed stems in the garden as an attraction for these regular visitors.

138, ARCTIC TOWHEE. Three to eight seen and heard daily at Innisfail, June, 1906.

BAIRD'S SPARROW. Six seen June 6, 1903.

136, SWAMP SPARROW. Recorded daily in June, 1903.

139, ROSE-BREASTED GROSBEAK. Observed daily in 1903 at Innisfail and a few were also seen at Red Deer in 1906. Small numbers were seen daily at the Miquelon Lakes in 1911.

145, TREE SWALLOW. Four to forty seen daily in June, 1911, and one to ten daily in June, 1903.

157, TENNESSEE WARBLER. One of the common breeding warblers near Red Deer.

170, REDSTART. Three to five seen daily in the four days at the Miquelon Lakes in June, 1911.

173, SPRAGUE'S SKYLARK. One to ten seen or heard daily in June, 1903.

178, RED-BREASTED NUTHATCH. While watching for an Osprey to return to feed its young at Pine Lake, near Red Deer, on June 2, 1906,

we were entertained by one of these birds which was feeding young in the same stub about six feet below the Osprey's nest.

180, HUDSONIAN CHICKADEE. Taken at Edmonton, September 24, 1896.

183, OLIVE-BACKED THRUSH. One to ten daily near Red Deer in June, 1906.—W. E. SAUNDERS, *London, Ont.*

Birds of Irregular Occurrence on Long Island, N. Y.—The following were recorded at Orient, Long Island, during the winter of 1918-19:

Phalacrocorax auritus auritus. One December 9. This was probably a belated transient. Covering a period of twenty years the writer has not listed it more than three or four times in winter.

Nettion carolinense. One February 9. To be listed with the rarest of winter visitants near Orient.

Rallus elegans. On January 23, a fine specimen was taken in a steel-trap set for muskrats. Retained in the writer's collection. This is apparently a very uncommon species on Long Island at any time. It has been observed in Orient several times in mid-winter, where it is to be looked for at that season along the exposed mud-flats of the brackish creeks at ebb tides; hiding in the grasses when tide is flood.

Oxyechus vociferus. One February 13 and another, or the same bird, on the 14th. Although frequently recorded in December, January and March, this is the first February record for Orient.

***Sphyrapicus varius varius.** One December 22. Very rare and irregular in winter.

Molothrus ater ater. February 2, flock of eleven; February 7, flock of twenty-four; February 27, flock of eight. In recent years this species is fairly regular in winter. Usually in flocks.

Pinicola enucleator leucura. Three January 19; one February 1. This is the third winter that the writer has recorded stragglers since the great flight of 1903-4.

Carpodacus purpureus purpureus. One January 23. Never common near Orient and to be classed with the rarest birds in winter.

***Melospiza georgiana.** Wintered through in numbers. The colony of thirty seen on December 22 in a swamp. It appears to be a regular winter sparrow in Orient, though usually rare and local.

***Lanius ludovicianus migrans.** Seen on December 22 and on February 7. Rare, but not out of place on Long Island in winter.

***Geothlypis trichas trichas.** A female was seen through the mouth of November. Recorded on December 22 and again on January 28.

Dumetella carolinensis. One February 12. They occasionally winter in Orient, confining themselves to a favored locality, as a cedar grove, or other suitable haunt affording both food and shelter.

***Telmatodytes palustris palustris.** One December 22. This is the first winter record in Orient. The species is unknown in Orient in summer and has occurred only as a very rare fall transient.

The species starred were reported in the 'Bird-Lore' Christmas Census. Vol. XXI, No. 1, 1919.—ROY LATHAM, *Orient, N. Y.*

Rare and Uncommon Birds at Branchport, Yates Co., N. Y.—

Macrorhampus griseus. DOWITCHER.—While I was concealed in a blind at the marsh at Branchport, August 6, 1911, a Dowitcher came on the mud and I had it under observation with 8 power binoculars for nearly two hours. August 13 I saw another Dowitcher at this same place. This seems to be the only Dowitcher record for Yates County.

Sterna caspia. CASPIAN TERN.—My first record for Caspian Tern was May 2, 1912, when five of these beautiful birds were around Lake Keuka at Branchport all day long. Two more were seen May 4, four May 6, and two May 9. My next record was two birds seen May 11, 1915, and ten birds May 17 to 19, 1915. In 1916 none were seen. In 1917 two were seen April 25 (my earliest record) and two more July 15 (my only summer record). In 1918 three birds were seen May 6, and this year (1919) four were seen May 2 and two May 4.

Spinus pinus. PINE SISKIN.—Two Pine Siskins were under the balsams in my yard the morning of May 10, 1912. Two more were in the road in front of my house May 12. May 20, 1917, I saw a flock of about twenty-five Siskins in the bushes and on the ground along the "Big Gully" north of Branchport.

Spatula clypeata. SHOVELER.—Two Shoveler ducks were shot on the lake at Branchport, November 12, 1912, and brought to me for identification.

Sterna hirundo. COMMON TERN.—May 9, 1913, ten Common Terns appeared on the lake at Branchport where they were seen in company with Ring-billed and Bonaparte's Gulls until May 16, when they disappeared. May 11, 1915, there were several Common Terns with a small flock of Bonaparte's Gulls and they were again seen on May 25. May 3, 1917, two were seen with a large flock of Bonaparte's Gulls. May 20, more than twenty were seen and May 27 there were more than forty Terns on the lake. April 28, 1918, and again May 12, eight were seen with Bonaparte's Gulls. May 2, 4, and 11, 1919, from two to twelve Terns were seen. Prior to 1913 I had never seen a Common Tern on Lake Keuka, but now they seem to be of regular occurrence.

Ammodramus nelsoni subvirgatus. ACADIAN SPARROW.—June 3, 1913, I saw an Acadian Sparrow in the thick marsh grass at Branchport. I had a good look at it at a distance of only three feet, but after it disappeared into the grass I was unable to flush it again. October 5, 1919, I saw another Acadian Sparrow in this same place, and October 14 another one lit in the cat-tails only ten feet away.

Nettion carolinense. GREEN-WINGED TEAL.—November 21, 1913, a trapper told me that he had caught a small duck in one of his traps and that he had left it in a barrel beside his boat-house. I got the duck and

found it to be a female Green-winged Teal. It had been caught by the bill in a steel trap that was set for muskrats. This same man brought me a Green-winged Teal that he had shot October 8, 1914. The Green-winged Teal is rather rare in this locality.

Pinicola enuncleator leucura. PINE GROSBEAK.—December 9, 1913, I saw a single female Pine Grosbeak in a locust tree in the streets of Branchport.

Hesperiphona v. vespertina. EVENING GROSBEAK.—I saw eight Evening Grosbeaks in a pear tree in the streets of Branchport the morning of March 28, 1916. They soon took flight and could not be again located.

Progne s. subis. PURPLE MARTIN.—A single Purple Martin stopped for a little while on the telephone wire in the street at Branchport, April 23, 1916.

Asio flammens. SHORT-EARED OWL.—November 2, 1916, a dead Short-eared Owl was picked up in the swamp at Branchport. Evidently it had been shot and left where it fell.

Aluco pratincola. BARN OWL.—May 27, 1917, a Barn Owl was brought to me by a young man who had shot it. He said that it was after his chickens. This is the first record of the Barn Owl for Branchport.—VERDI BURTCH, *Branchport, N. Y.*

Unusual Winter Bird Records for Iowa City, Iowa.—Although the early winter season has been unusually severe in this locality and cold weather has continued almost without intermission since late November, 1919, a number of species of birds which ordinarily winter farther south have remained with us. The minimum temperature to date has been—25° Fahr. and the ground has been practically covered with snow since early December. Among eighteen species of birds seen on December 26, 1919, between the hours of 8:00 A. M. and 2:30 P. M., the three following seem worthy of special mention.

Falco sparverius sparverius. SPARROW HAWK.—One example of this species was seen in a small wooded plot about one-half mile west of town. The bird was studied with the glasses at a distance of twenty yards. It was being tormented by a pair of blue jays which appeared to have no hesitancy in attacking the hawk, thus causing it to change its perch frequently in the tops of the trees. This is my first and only winter record for this bird.

Anderson (Birds of Iowa, Proc. Davenport Acad. Sci., XI, 1907, 257) says concerning the status of this hawk in Iowa: "A common migrant in all parts of the state and somewhat less common as a summer resident. * * * A male specimen was shot at Iowa City, November 28, 1905." Bailey (The Raptorial Birds of Iowa, Iowa Geol. Surv. Bull., No. 6, 1918, 170) adds: "Although rarely found with us during the winter, Mr. G. H. Berry, of Cedar Rapids, brought the writer one that was killed in the month of January while pursuing English Sparrows."

Colaptes auratus luteus. NORTHERN FLICKER.—A single individual was seen in a low, wooded area along the Iowa river one mile south of Iowa City. It was very wary and a close-up observation of the bird was impossible. This form has been reported in winter a few times locally but I have seen no published record of such occurrence.

Anderson (*l. c.* 278) remarks as follows concerning this bird: "Occasionally individuals are observed in winter. In Winnebago County, I have seen specimens in November, December and February, but very rarely during these months." Spurrell (*Wilson Bull.*, XXI, No. 4, 1919, 120) gives the Northern Flicker as a rare winter resident in Sac County, western Iowa.

Pipilo erythrophthalmus erythrophthalmus. TOWHEE.—One individual, a male, was found in a sparsely wooded and somewhat sheltered hollow three-fourths of a mile west of town. Several houses are in the immediate vicinity of the brush pile where the bird was first seen and which probably served as his shelter. Attention was first called to the bird by the familiar "*chewink*" which was uttered several times; however, the calls were neither so loud nor so frequently given as is characteristic of the species in spring and summer. In an attempt to photograph this unusual winter resident, the writer approached to within fifteen feet of the bird when it flew to a nearby blackberry patch. It seemed to have a dislike for standing in the snow and immediately hopped upon a low bush; when pressed too closely it flew away a considerable distance before alighting.

Anderson (*l. c.* 326) gives this bird as a common summer resident. His winter records are as follows: A few in Van Buren County, a female near the Rock Island Arsenal and another individual at Webster City.—DAYTON STONER, *University of Iowa, Iowa City, Ia.*

Notes on Winter Birds of the Missouri Ozarks.—On February 2, 1920, after about five days of very warm weather for this time of year, I observed three Killdeers feeding together in a horse lot beside a slough. The previous earliest date in the spring, for Missouri, is February 17. Though I took no specimens, I was too close for any possibility of error in my identification.

On January 2, 1920, I saw and listened to a Bewick's Wren singing his full song for almost an hour. The day on which I heard him singing was very warm for January. Although I have observed the Bewick's Wren several times this winter, this is the first time that I had heard one singing since late in November. Up to date, February 7, I have not heard another.

On February 4, a friend brought me a fine female specimen of the Great Horned Owl. He had found it sitting on two eggs in a slight depression in the hay in a barn loft. There had been no apparent effort to arrange the hay in any way, and there were no sticks nor any sort of building material from the outside. I can find no record of a similar nesting of this species.—PREWITT ROBERTS, *Conway, Missouri.*

Mesa County, Colorado, Notes.—The following notes relate to birds which have not yet been recorded from this County, or are relatively rare within its limits, and warrant being placed on record so as to help round out our knowledge of avian distribution in the State:

Charitonetta albeola. BUFFLE-HEAD DUCK.—A pair of these ducks stayed in a slough near the Sugar Factory at Grand Junction, having first been noticed there on April 18, 1918.

Oidemia deglandi. WHITE-WINGED SCOTER.—In October, 1918, a flock of five females of this species was seen by J. W. Spencer, Forest Supervisor, at Mesa Lake, Grand Mesa. One is now a mounted specimen in the collection of the Riverside School of Grand Junction. The determination of this specimen was confirmed by Dr. W. H. Bergtold.

Astur atricapillus striatulus. WESTERN GOSHAWK.—A single individual of this species was taken at Clifton in October, 1919; this specimen is now amongst the mounted birds of the Riverside School.

Falco peregrinus anatum. DUCK HAWK.—On May 19, 1918, I secured a dead bird of this species, which had been found in the yard of Allen School (just east of Grand Junction). This specimen was sent to, and examined by, Dr. Bergtold, who confirmed my previous diagnosis.

Tyrannus tyrannus. KINGBIRD.—A pair of this species was seen by the writer at Grand Mesa, near Loma, on August 25, 1919.

Vermivora celata lutescens. LUTESCENT WARBLER.—A single individual of this warbler was studied for a long time at close range on August 22, 1918, at Pinon Mesa.

Sitta canadensis. RED-BREASTED NUTHATCH.—This species has been noted several times lately in or near Grand Junction; one was found dead within the city limits on March 10, 1917, during January, 1917, several were detected along the Grand River in its course through the city, quite a number were noted near my cabin which is located in the hills neighboring Grand Junction, during the summer of 1919, and on September 2 of that year one appeared at my residence in Grand Junction. I have also seen this species at Clifton.

Sitta pygmaea pygmaea. PYGMY NUTHATCH.—Twelve individuals of this species were seen at Enoch's Lake, Pinon Mesa, on August 12, 1919, and a flock of about twenty birds was noted on August 21, 1918, and a smaller flock was seen on August 31, 1918, both flocks having been noted on the Mesa just mentioned.

Sialia mexicana bairdi. CHESTNUT-BACKED BLUEBIRD.—This species was seen in Grand Junction on April 1, 1918, a pair was noticed feeding three young on Pinon Mesa on August 9, 1918, and during August of the same year nearly every flock of Mountain Bluebirds (*Sialia currucoides*) coming under my observation contained a few of the chestnut-backed species. This species is seen mostly at or above the 8000 feet level of latitude, and is seen in the "Valley" only during migration.—ADA B. COPELAND, *Grand Junction, Colo.*

Some North American Birds Obtained in Japan.—Of North American birds which stand recorded in the literature as having been obtained in Japan, there are: The Buff-breasted Sandpiper, *Tringites subruficollis* (Vieill.), once obtained in the Province of Owari (Stejneger, Proc. U. S. Nat. Mus., Vol. XVI, 1893, p. 616); the Short-billed Gull, *Larus canus brachyrhynchus* Richardson, obtained in the Kurile Islands (Dresser, Man. Pal. Bds., p. 830); and Cassin's Auklet, *Ptychoramphus aleuticus* (Pall.), which occurred also in the Kurile Islands (Uchida, "Nihonchorui Zuzetsu," Vol. I, p. 301). To the writer are known three more cases of North American birds having been met with as stragglers in Japan. They are as follows:

Mareca americana (Gmelin). BALDPATE.—A nearly adult male of this duck was obtained December 4, 1908, in the duck-decoy pond owned by me at Haneda, between Tokyo and Yokohama (Kuroda, Zool. Mag. Tokyo, Vol. XXI, 1909, p. 145). A second example, an adult male, of the same species, was captured at the same pond, January 16, 1918 (Kuroda, "Tori," Vol. II, No. 6, 1918, p. 52).

This remarkable duck seems to occur in Japan only as a rare straggler in migration, mixed in flocks of the European Widgeon (*M. penelope*). It is said that it is occasionally captured in the neighborhood of Tokyo. I have not yet seen a female example of this duck obtained in this country. Dr. Stejneger (Proc. U. S. Nat. Mus., 1887, p. 136) has recorded that a single straggler of the species was picked up dead on a sand-dune in Bering Island, and Dresser (Man. Pal. Bds., 1903, p. 616) has mentioned that the species occurred two or three times in Great Britain.

Nettion crecca carolinense (Gmelin). GREEN-WINGED TEAL.—A fully adult male, with white crescentic bands on each side of the chest, was obtained at Haneda in the same pond mentioned above, February 17, 1916 (Kuroda, Zool. Mag. Tokyo, Vol. XXVIII, 1916, p. 413). This is the only instance known to me of this teal having occurred in Japan. It is probably a rarer straggler in this country than the American Widgeon. According to Dresser (Man. Pal. Bds., 1903, p. 612) the teal in question had been obtained twice at least in Great Britain.

Xema sabini (J. Sabine). SABINE'S GULL.—A male of this gull in complete summer plumage was collected on the coast of Kesen-numa Bay in Prov. Rikuzen, November, 1909 (Kuroda, Zool. Mag. Tokyo, Vol. XXIV, 1912, p. 55). This is the only case known of its occurrence in Japan.

This Gull like the two species of duck already mentioned is properly an American species, of which some individuals are known to have been met with as accidental stragglers in Europe. Thayer and Bangs (Proc. N. Eng. Zoöl. Club, Vol. V, 1914, p. 11) have noted that it was not observed on the Arctic coast of Siberia, while Koren says he has examined a skin of the species in possession of a native at Nijni Kolymsk, East Siberia.—NAGAMICHI KURODA, Tokyo, Japan.

The Color of Natal Down in Passerine Birds.—Some years ago I started taking notes on the appearance of young birds when newly hatched. I found that young passerine birds differed widely, not only in size, but in color of skin and in amount, distribution and color of natal down. So far as I know, nothing has been published on this subject, except that Dr. Dwight has given the color of natal down of a good many passerine species. (The Sequence of Moults and Plumages of the Passerine Birds of New York.)

In a number of species of birds I have found the natal down white in color, among them the Red-winged Blackbird (*Agelaius p. phoeniceus*) and the Robin (*Planesticus m. migratorius*). I was rather surprised when I came to study Dr. Dwight's work to find that the down of these two species was given as mouse-gray. This year (1919) I verified my observations concerning the down of the newly-hatched Robin, and then also verified those of Dr. Dwight. My observations were all made from living young in the nest. Dr. Dwight tells me that his were made from the skins of juvenal birds, where the natal down still adhered to the feathers. A young Robin in just such a condition was brought me by one of my pupils for identification this spring. The down still adhering to the feathers was undoubtedly mouse-gray, and in great contrast to the color of the down of newly-hatched young of this species.

It seems, therefore, that either some pigment change occurs in the down, due to exposure to light and air, or what is more probable, that the dirt and dust of nest-life change the color of the down from white to gray. Whichever cause, it is evident that the down of a number of species is probably much lighter in color when the birds are hatched than examination of older specimens would indicate.—ARETAS A. SAUNDERS, *South Norwalk, Conn.*

Birds and Tent Caterpillars.—For a number of years prior to 1917 the Tent Caterpillar (*Malacosoma americana*) was unusually abundant in many parts of New England and perhaps in other places. Having been in the west until 1913 I do not know just when the scourge of these insects began, but I first noticed their great numbers at Newport, R. I., in the spring of 1913. The next few years the insects appeared to spread and increase in numbers. I noted them about Norwich, Clinton, New Haven, Bridgeport, and Norwalk, Connecticut, and in the spring of 1915 at St. Albans, Vermont, where they were even more abundant, if possible, than in Connecticut.

In the winter of 1916-17, the egg clusters of the tent caterpillar seemed as abundant as ever, and early in the spring these eggs hatched, and the nests of young caterpillars began to appear. I had made it a practise each winter and early spring to destroy the eggs or young caterpillars at every opportunity. As the spring of 1917 advanced, I soon found that my work had been done for me. Each nest that I visited, with

intention of destroying it, was empty of caterpillars, and usually had a large round hole through the web. At this time the caterpillars were still very small, less than half an inch long, and the nests were only a few inches across. The majority of people do not notice these nests until the caterpillars are full-grown, and their depredations on surrounding foliage begin to be extensive. For that reason many were of the opinion that there were none in the spring of 1917, and I have heard it stated that a fungus disease destroyed them in 1916. My observations go to show that they were still abundant early in 1917 and that they disappeared that year when only half-grown. A fungus disease may have had something to do with it, but a large part of the credit, according to my observations, goes to birds, at least in the vicinity of Norwalk.

It is generally known that this caterpillar is immune from the attacks of all birds but the Cuckoo because of its long hairs. It is my opinion that when the caterpillars are small, and the hairs decidedly shorter, that birds can eat them in case of necessity. The spring of 1917 was late and cold. After the middle of May came the great flight of warblers, thrushes and other insectivorous birds. Their arrival was coincident with the disappearance of the tent-caterpillars. Other insect life was scarce, and many birds died from cold or starvation. I actually observed a Parula Warbler (*Compsothlypis americana usneae*) and a Yellow-breasted Chat (*Icteria v. virens*) in the act of eating these caterpillars. The numerous empty nests with holes in them, such as a bird would make with its beak, were abundant evidence that what I had seen twice had taken place many times. How effectually the birds did their work was shown by the fact that only a single nest was observed in 1918 and none in 1919.—ARETAS A. SAUNDERS, *South Norwalk, Conn.*

RECENT LITERATURE.

Baldwin's 'Bird-Banding by Means of Systematic Trapping.'¹—One of the most important contributions to bird-banding activities and the study of bird migration, of recent years, is Mr. S. Prentiss Baldwin's report of his operations at Thomasville, Georgia, and Cleveland, Ohio, during the years 1914–1918, which constitutes the principal article in the thirty-first 'Abstract of the Proceedings' of the Linnaean Society of New York, for the year ending March 11, 1919.

Mr. Baldwin found that a far greater number of "return" records could be obtained from the systematic trapping of birds in connection with banding them than by limiting one's operations to the banding of young birds in the nest and trusting to their possible discovery elsewhere. His paper is so full of valuable information and suggestions that everyone interested in the matter should read it in its entirety and we shall here quote only some of his more important results.

The work at Thomasville was carried on for from four to six weeks during three winters. Government sparrow traps were used, two the first two years and five the third. The birds seemed to regard the traps as feeding stations and were not frightened by being caught and handled, in fact the problem was rather to keep some individuals out of the traps than to entice them to enter. Some birds were in the trap every day, and out of 654 individuals taken 441 were records of birds that were taken more than once.

Two White-throated Sparrows banded at the Thomasville trap in 1915 were retaken in 1916 and another one in 1917, while four of those banded in 1916 were taken at the same place in 1917. No less than 25 of the birds banded in 1916 and six in 1915 were trapped again in 1917. Mr. Baldwin has thus demonstrated that migrants come back to the same place to winter year after year, and others have proven that they come back to the same spot to nest. He has also shown however that they do not always do so and he states that the average observer is all too prone to regard a pair of birds occupying a certain box or hole as the same pair that occupied it the year before. The chance he considers is about one in five that one of the pair will return and perhaps one in twenty-five that they both return.

In the case of House Wrens he shows that a pair reared a brood on his farm near Cleveland while a second brood in the same box was found to be the offspring of one of the original pair and a new mate, the other parent of the first brood, having also secured a new mate, was caring for a brood in another box. These facts as well as the return of birds to the

¹ Abstract of the Proceedings of the Linnaean Society of New York. For the year ending March 11, 1919. No. 31, 1918–1919. Issued December 23, 1919.

same nest site have important bearing upon the question of whether birds mate for life, recently agitated in 'The Condor.'

As Mr. Baldwin points out, much valuable data on the age to which birds live, the length of time that migrants remain at a given spot on their line of flight, the return of young birds to the spot where they were raised, etc., may be secured by this method.

The practice of trapping renders bird-banding a much more attractive study with more definite returns, and we trust that Mr. Baldwin's success will lead others to follow his example. In this connection attention might be called to similar work that has been carried on in England, especially with reference to the movements of Starlings, where many records of individual birds have been obtained.—W. S.

Chapman on New South American Birds.¹—Studies of various collections of South American birds received at the American Museum of Natural History have led Dr. Chapman to propose seventeen new species and subspecies and one new genus as follows: *Micropus peruvianus* (p. 253), Ollantaytambo, Peru; *Grallaria watkinsi* (p. 256), Prov. Piura, Peru; *G. boliviana* (p. 257), Cochabamba, Bolivia; *Synallaxis stictothorax piurae* (p. 257), Piura, Peru; *Phacelodomus striaticeps griseipectus* (p. 258), Cuzco, Peru; *Hylocryptus* (p. 258), new genus, *H. erythrocephalus* (p. 259), Alamor, Peru-Ecuador boundary; *Xenops rutilus connectens* (p. 259), Cochabamba, Bolivia; *Xiphorhynchus triangularis bangsi* (p. 260), Cochabamba, Bolivia; *Thripobrotus layardi madeirae* (p. 261), Rio Madeira, Brazil; *T. warszewiczi bolivianus* (p. 262), Incachaca, Bolivia; *Mecocerculus subtropicalis* (p. 262), Urubamba Canyon, Peru; *Anaeretes agraphia* (p. 263), Sta. Anna, Peru; *Mionectes striaticollis columbianus* (p. 264), Sta. Elena, Colombia; *Myioborus bolivianus* (p. 265), Incachaca, Bolivia; *Basileuterus luteoviridis superciliaris* (p. 265), Urubamba Canyon, Peru; *Pheucticus uropygialis terminalis* (p. 266), Urubamba Canyon, Peru; *Catamenia analoides griseiventris* (p. 267), Cuzco, Peru.

As is customary in Dr. Chapman's papers, the descriptions are full and there are numerous critical remarks upon allied forms, while all of the material examined is listed.—W. S.

Cory's 'Catalogue of Birds of the Americas.'²—The second volume of Mr. Cory's comprehensive work,² constituting the second half of the second part, appeared on the last day of 1919. It covers the families, Trogonidae, Cuculidae, Capitonidae, Ramphastidae, Galbulidae, Buc-

¹ Descriptions of Proposed New Birds from Peru, Bolivia, Brazil, and Colombia. By Frank M. Chapman. Proc. Biological Society of Washington, Vol. 32, pp. 253-268. December 31, 1919.

² Catalogue of Birds of the Americas. By Charles B. Cory, Field Museum of Natural History Publication 203, Zoological Series, Vol. XIII. Part II, No. 2, pp. 315-607. Chicago, December 31, 1919.

conidae and Picidae, bringing the catalogue down to the Passerine families. The pagination, it will be noticed, is continuous with the first half of the part and the present instalment has an index to all the genera and species listed, as well as addenda and errata to the first part of the publication.

The general style of the work follows closely that of the first instalment but there are a number of new forms described of which there is no list and they could easily be overlooked in a casual examination of the volume. The propriety of publishing new names in this manner has already been discussed in these columns and we shall only add that where the practice is followed there should be a list of the new forms given somewhere in the publication. A painstaking search through the pages discovers the following, though it is possible that some have been overlooked: *Coccyzus minor caymanensis* (p. 336), Grand Cayman; *Nystalus maculatus nuchalis* (p. 398), *Soroplex campestris cearae* (p. 414), *Chrysoptilus melano-chlorus juae* (p. 444), all from Ceara, Brazil; *Celeus elegans approximans* (p. 450), Boa Vista, Amazonia; *Chrysoptilus melanolaemus perplexus* (p. 442), Conchitas, Buenos Aires; *Chrysoptilus punctigula notata* (p. 446), "Colombia" and *Crocomorphus flavus peruvianus* (p. 457), Lagunas, Peru.

The propriety of basing a new name on a specimen with no more detailed locality than "Colombia," in these days of minute accuracy, is certainly open to criticism as it will prove a hindrance to anyone else working upon the genus *Chrysoptilus*. The "provisional" naming of another form (*perplexus*), which is not recognized in the list proper, in case the "differences prove constant," is also against present-day practices. A name that is once published with a description is established for all time, no matter whether it is properly and conspicuously printed or proposed provisionally and buried in a foot-note, and the author who adopts the latter method at once exposes himself to criticism.

Mr. Cory has done an important and tedious piece of work in bringing out this volume and it will be of great use to all who are interested in the avifauna of the New World. We happen to know that he has already made considerable progress on the next part and we trust that it will not be long before it is ready for the press and that the Field Museum will be able to carry on a publication which is of so much importance to all systematic ornithologists.—W. S.

Witherby's Handbook of British Birds.¹—Part 6 of this important work, comprising pages 337-400, was issued January 12, 1920, and covers the warblers and part of the thrushes. One half-tone plate illustrates each group and there are a number of text cuts of wings, tails, etc. The

¹ A Practical Handbook of British Birds. Edited by H. F. Witherby. London, Witherby & Co., 326 High Holborn, W. C. I. Part 6, Jan. 12, 1920. Price 4s, net per part.

standard of treatment is fully up to the preceding parts and the description of the plumages of the warblers very full and detailed. We are informed that the two remaining parts needed to complete Volume I and the order Passeres, will be issued together on April 6.—W. S.

A Geographical Bibliography of British Ornithology.¹—Part 2 of this excellent bibliography, the initial number of which was noticed in our last issue, was published early in January. It covers the county lists and notes from Essex to Middlesex in alphabetical order. The quotation from Gilbert White's *Selborne* which appears on the cover is appropriate and could well be taken to heart by many bird students today who, while lacking time and opportunity for broad scientific work, may produce valuable results by specializing upon a limited locality. The lines referred to are as follows: "Men that undertake only one district are much more likely to advance natural knowledge than those that grasp at more than they can possibly be acquainted with; every kingdom, every province, should have its own monographer." This part is beautifully printed like its predecessor and is a handsome publication.—W. S.

Annual Report of the National Association of Audubon Societies.

The fifteenth annual report of the National Association of Audubon Societies,² a pamphlet of over one hundred pages, demonstrates once more the splendid work that this organization is accomplishing. We are becoming so accustomed to hearing of the work of the National Association that we are likely to imagine that we have always had it with us and it would be well if some of those who read the pages of this year's report would turn to the reports of the A. O. U. Committee on bird protection published in 'The Auk' twenty years and more ago, in order to better realize present-day conditions.

Among the leading topics in the report of the Secretary, Mr. T. Gilbert Pearson, we may mention just a few: the seizure of \$150,000 worth of illegally imported plumes by the customs authorities at New York; the raising of \$13,000 toward the erection of a Roosevelt memorial bird fountain and the ornithological education in the past nine years of no less than one million children in the schools of the country. The appeal for an endowment fund to further develop and maintain this work is certainly warranted.

The work of the wardens is also well worthy of careful consideration and the reviewer, who enjoyed the privilege of visiting the Breton Island

¹ *A Geographical Bibliography of British Ornithology from the Earliest Times to the End of 1918.* By W. H. Mullens, H. Kirke Swann, and Rev. F. R. C. Jourdain. Witherby & Co., 326 High Holborn, London, 1920. Part 2, Price 6 s. net.

² *Bird Lore* XXI, No. 6, pp. 395-502.

Reservation with Warden Sprinkle last spring, can testify to the painstaking devotion of these men to the work that they have undertaken and the need of more adequate remuneration for their services. The patrol of the government reservations has now passed from the Audubon Societies to the Biological Survey of the U. S. Department of Agriculture, where it properly belongs. The long list of reports of allied and State societies contain much of interest and illustrate how widespread the interest in popular bird study has become.

In the face of this most encouraging report it is distressing to turn to the editorial in the last issue of 'Bird-Lore,' in which we learn of the action of Legislatures and Congress leading to the drainage and opening to settlement of portions of the Klamath Lake Reservation in Oregon and California. The former operations have already converted part of the lake into a desert, and the only hope for saving this most important refuge seems to lie with the Secretary of the Interior whose interest might be aroused if sufficient appeals were made to him.—W. S.

Bulletin of the Essex County Ornithological Club.¹—This attractive publication introduces a new bird club apparently of a type of which we cannot have too many. We have only praise for the numerous "Audubon" clubs which are springing up all over the country, but of necessity their activities are so completely taken up with conservation of wild life and the furthering of popular and elementary nature study, that the more serious side of ornithology, such as has engaged the attention of the "Nuttall," "Cooper" and "Delaware Valley" Clubs, has not come within their scope. The mingling of the two activities in one organization has not been productive of very happy results and we therefore welcome the organization of "ornithological" clubs wherever the material for such clubs exists. The presence of an "Audubon" club in the same community in no way complicates the situation and members of the former may readily be also active in the latter. The Essex County Club, like two of the three mentioned above, is a men's club and was formally organized in 1916, although a nucleus had existed since 1907 as the "Ipswich River Bird Trip." The present officers of the club are: President, Frank W. Benson; Vice President, Albert P. Morse; Secretary, Ralph Lawson; and Treasurer, Albert B. Fowler; and the meetings are held at the Peabody Museum at Salem, Mass.

Besides the account of the founding of the Club, By-Laws, Calendar and List of Members, the present publication contains an article on the 'Identification of Hawks in the Field' by Dr. C. W. Townsend; 'Thirteen Ipswich River Bird Trips' by Ralph Lawson, with a list of 136 species observed; 'Coöperative Effort in Bird Study' by Arthur A. Osborne; and 'Told Around the Big Table'—a department for general notes. Under

¹ Bulletin of the Essex County Ornithological Club, December, 1919. Salem, Mass. pp. 1-55. Price 50 cts.

the last head we notice that the contributions are signed only with the initials of the authors, a practice which sanctioned by custom in the case of reviews is certainly open to criticism in the case of scientific contributions.

In looking over the various records we wonder if the observer of the Connecticut Warbler in May fully realized the excessive rarity of this species in the east, in spring, or was familiar with the plumage of the female Mourning Warbler which has a more or less conspicuous eye-ring and bears a striking resemblance to the Connecticut. Mr. Brewster's statement that there was not a single spring record of the bird in any part of Massachusetts in which he had full confidence, is significant.

We wish the Essex County Club every success and trust that the present publication is the forerunner of a series of valuable bulletins upon the bird life of the district.—W. S.

Hollister's Account of the National Zoo.¹—In the Report of the Smithsonian Institution for 1917, published in 1919, there is an admirable popular account of the animals in the National Zoological Park, prepared by the director, Mr. Ned Hollister. It is fully illustrated by half-tones from photographs and a number of these are devoted to the birds, the Californian Condor, Whistling and Trumpeter Swans being among the more notable of the North American species. Among foreign species figured are the Horned Screamer, Cape Barren Goose—inadvertantly marked "Barren Ground Goose"—Black and Mute Swans, etc.

This pamphlet should serve an excellent purpose in producing a more intelligent interest in foreign birds and mammals. The great trouble with American systematic zoologists until quite recently has been that they have dealt almost exclusively with North American species and the broadening of the field in the present generation is most encouraging. In furthering this tendency our zoological gardens offer the best opportunities but too often there is a lack of accessible information about the mammals and birds that may be on exhibition. Mr. Hollister's "popular account" furnishes just what is needed, and may lead many a young student to a wider study of mammalogy and ornithology than he would otherwise have followed.—W. S.

Cory's Review of the Genus *Rhynchocyclus*.²—In this useful paper Mr. Cory gives the results of his study of the specimens belonging to this genus in the collection of the Field Museum of Natural History.

¹ The National Zoological Park: A Popular Account of Its Collections. By Ned Hollister. From the Smithsonian Report for 1917, pages 543–593, with 46 plates. Washington, 1919.

² The Relationships and Geographical Distribution of the Species and Races belonging to the Genus *Rhynchocyclus*. Proc. Biological Society of Washington. Vol. 32, pp. 217–224. December 31, 1919. By Charles B. Cory.

As a result he recognizes eight species as follows, with the number of subspecies into which each is divided: *sulphurescens*, with six subspecies; *cinereiceps*, with two; *peruvianus*, with two; *marginatus*, two; *megacephalus*, one; *poliocephalus*, three; *grisescens*, one; and *flaviventris*, three. There is a full synonymy and discussions of relationship, with reprints of a number of the original descriptions.—W. S.

Recent Papers by Bangs and Penard.—These authors have recently considered the proper name for the Common Jungle Fowl¹ and decide that it should be *Gallus gallus gallus* (Linn.), the fact that this name was based upon a domestic variety in no way invalidating it. They select Bengal as the type locality. The other two races will therefore become *G. g. bankiva* Temminck, from Sumatra, and *G. g. ferrugineus* (Gmel.), from China.

Mr. Penard calls attention² to some untenable names. One, *Planchesia fusca* (Bodd.), is preoccupied and, as there is no other available, he proposes *P. pullata* (p. 21). *Muscicapa sibirica fuliginosa* (Hodgson) being also preoccupied, *M. c. cacabata* (p. 22) is proposed. For the same reason *M. ferruginea* (Hodgson) becomes *M. cinereiceps* (Sharpe) and *Eophona melanura melanura* (Gmel.) becomes *E. migratoria pulla* (p. 22), nom. nov. In another paper,³ Mr. Penard describes as new from Mt. Roraima, British Guiana: *Chloronerpes rubiginosus roraimae* (p. 29) and *Tanagra violacea rodwayi* (p. 30).

Mr. Bangs has also proposed⁴ as a new form, *Buteo lineatus eximius* (p. 35) from the Florida Keys.—W. S.

Van Oort's 'Birds of Holland.'⁵—Part 5 and the plates of Part 6 of Dr. Van Oort's notable work are now before us, the text to the latter to appear with Part 7. The ten plates of Part 5 illustrate the geese and brant, while those of the next part comprise the Shelldrakes (*Casarca* and *Tadorna*), the Mallard, Gadwall and three species of Teal. The various plumages are fully illustrated, including the summer or "eclipse" plumage of the males, in such species as exhibit this interesting phase. The high standard of both text and plates as described in reviewing the earlier parts is fully maintained.—W. S.

¹ The Name of the Common Jungle Fowl. By Outram Bangs and Thomas Edward Penard. Proc. N. E. Zool. Club, Vol. VII, pp. 23-25. October 31, 1919.

² Some Untenable Names in Ornithology. By Thomas Edward Penard. *Ibid.* pp. 21-22, October 31, 1919.

³ Two New Birds from Roraima. By Thomas Edward Penard. *Ibid.* pp. 29-31, December 23.

⁴ A New Red-shouldered Hawk from the Florida Keys. By Outram Bangs. *Ibid.* pp. 35. January 16, 1920.

⁵ Ornithologia Neerlandica. De Vogels van Nederland door Dr. E. D. Van Oort. Leiden, Martinus Nijhoff. Part 5 text and plates; part 6, plates only.

Kirk Swann's 'Synoptical List of the Accipitres.'¹—This useful list is continued from *Herpetotheres* to *Pernis* in the present instalment, completing eighty genera. We notice that our American White-tailed Kite is regarded as a subspecies of the Australian *Elanus axillaris*. With actual intergradation out of the question this disposition of the bird must have been made upon the claim of overlapping of characters, but we fail to find the claim sustained upon an examination of material at hand, though it is interesting to note the resemblance between the two species in connection with the arguments for a relationship between the Australian and South American faunas which have from time to time been published.

This instalment of Mr. Swann's work contains an additional list of ten species and subspecies omitted from the preceding parts, among which we notice *Spizaetus batesi* W. Selater, which we regard as identical with *S. africanus* Cassin.—W. S.

Dr. Shufeldt's Bibliography.—In the 'Medical Review of Reviews' for January, 1920,² there is begun a bibliography of the writings of Dr. R. W. Shufeldt prepared by himself, with a short introduction from which we learn that since the appearance of his first paper in 1881, he has published from twenty-five to thirty papers or books annually, the total at the present time numbering considerably over 1500. The subjects while largely biological, cover a wide range of topics. The present instalment runs to the end of 1888 and carries the list to No. 201. The author's papers, as is well known, are so widely scattered that a bibliography of this sort will be a convenience to those who wish to consult them, and surely no one is so well fitted for compiling the list as the author himself. Our only regret is that the biographical portion is not more complete.—W. S.

Stuart Baker on Egg Collecting and Its Objects.—It is very gratifying to have an article on egg collecting from one who is himself a collector and yet who fully appreciates what is meant by the word science. When the scientific ornithologist has attempted to point out the weak points in egg collecting, he receives scant attention from the egg collector who considers that he knows nothing about the subject, while many a collector who claims to be collecting for "scientific" purposes fails to show the slightest appreciation of the meaning of that term.

¹ Synoptical List of the Accipitres (Diurnal Birds of Prey) Part III. January 20, 1920, pp. 77-114. Price, 4 shillings.

² Complete List of My Published Writings. With Brief Biographical Notes. (First Instalment.) By R. W. Shufeldt, M. D., Major, Medical Corps, U. S. Army. Medical Review of Reviews, XXVI, No. 1, January, 1920, pp. 17-24. Frederick H. Robinson, senior editor, 51 East 59th St., New York City, N. Y. Price per number, 25 cents.

Mr. Baker starts out with the quotation of a leading ornithologist: "Of egg collectors we have many, of oölogists, alas! but very few," which he says is "a very true summing-up of the situation, however depressing it may be." He goes on to say that the basal idea of those egg collectors who have *some* object in view is to ascertain and record the color and description of the eggs of each species of bird, but he adds, all such preliminary work has already been done. The real work now is to discover the underlying reasons for coloration and peculiar shape and the method of adaptation and eliminative protection. There is also the study of relationship in egg structure between birds of different families and genera as an aid to working out the true classification of birds, as well as the study of geographic variation in eggs in connection with the range of the species and the recognition of subspecies.

"The crudest and most deservedly abused form of collector," says Mr. Baker, "is the man sets out with the ambition of filling one box or drawer with the eggs of one species. Such collections merely form a mass of beautiful dead things which gratify his eye and sense of possession." He also warns against making a specialty of abnormal sets for such a collection, while it may be very beautiful is "scientifically almost useless," since all scientific work must be done upon normal sets.

There are great opportunities for developing "oölogists" out of our host of "egg collectors" if they are guided in the right paths, and Mr. Baker's paper may be read with profit both by the collector and by those who are opposed to collecting. Incidentally the journal in which the paper appears, 'The Oologists' Exchange and Mart,'¹ is an admirable little publication dealing with the serious side of egg collecting and well worthy of perusal by American oölogists.—W. S.

Economic Ornithology in Recent Entomological Publications.—

Allusions by entomologists to the bird enemies of various insects are cited and discussed in the following paragraphs, each devoted to a different insect or group of insects.

False wireworms (*Eleodes*).—These are the larvae of beetles of the family Tenebrionidae, which are injurious in western states to grain, fruit and garden crops. The author of the paper reviewed² notes from various sources that Burrowing Owls, Butcher Birds, Crows, Crow Blackbirds and Red-headed Woodpeckers prey upon these beetles and further states that adults have been found by the Biological Survey in stomachs of 13 species of birds. This record may now be considerably improved. The most important economic species of false wireworm (*Eleodes tricolorata*) has been found in the stomachs of eight species of birds, as follows: Frank-

¹ The Oologists' Exchange and Mart. Kenneth L. Skinner, Editor, Brooklands Estate Office, Weybridge, England. Subscription, \$1.25 per year.

² McColloch, J. W. Journ. Ec. Ent., Vol. II, No. 2, April 1918, pp. 219-220.

lin's Gull, Upland Plover, Red-headed Woodpecker, Lewis's Woodpecker, Crow (in 21 stomachs), Crow Blackbird, Meadowlark, and Curve-billed Thrasher. Various other species of *Eleodes* have been found to be eaten by the following 16 birds in addition to the eight just named: Avocet, Sparrow Hawk, Burrowing Owl, Great-horned Owl, Hairy Woodpecker, Red-shafted Flicker, Road-runner, Horned Lark, Arkansas Kingbird, Magpie, Brewer's Blackbird, Yellow-headed Blackbird, Loggerhead Shrike, Mockingbird, Sage Thrasher, and Robin. The total list of known bird predators on *Eleodes*, therefore, is now 24. Of these, the crow, magpie and roadrunner probably are the most effective.

Lotus borer (*Pyrausta penitalis*).—This moth larva feeds on a variety of plants but seems to damage man's interests only when feeding on the American lotus. The larvae frequently destroy every seed in the receptacle of this beautiful waterlily. In an account¹ of the species, Dr. F. H. Chittenden states that blackbirds are said to eat the larvae before they go into shelter. In July, 1919, the reviewer had an opportunity to observe an infestation of *Nelumbo* by this species at the Dardenne Lakes, Missouri, and the work of blackbirds against the pest. A large proportion of the receptacles of the water chinquapin were blasted and the exit holes of the larvae with the accompanying frass and silk gave a clue to the pests, good specimens of which were soon found. Red-winged Blackbirds were observed working at the receptacles and investigation showed they knew well how to dig out the larvae. All of the infested receptacles near the fringe of trees in which the birds perched, seemed to have been freed of the lotus-borers.

Round-headed apple-tree borer (*Saperda candida*).—Mr. Fred E. Brooks says that this species is the most destructive in the eastern United States of any of the several kinds of insects that injure apple-trees by boring into the bark and wood. Birds are the only important enemies, and the author states² that "Woodpeckers destroy great numbers of the borers by removing them from their burrows. . . . In some cases from 50 to 75 per cent. of the borers are destroyed in this way. . . . Probably both the hairy and downy woodpeckers feed on the borers." It should be noted that Mary Treat has definitely recorded³ that the Downy Woodpecker and Flicker feed upon this pest.

The Biological Survey has found beetles of the same genus as the apple-tree borer in stomachs of the Laughing Gull, Cassin's Kingbird, Magpie, Bluejay, Meadowlark, Red-eyed Vireo and Robin.

Flat-headed apple-tree borer (*Chrysobothris femorata*).—The same author quoted with reference to the preceding pest, notes⁴ that Woodpeckers devour also many flat-headed borers, and gives the names of three species

¹ Journ. Ec. Ent., Vol. II, No. 6, Dec. 1918, p. 457.

² Farmers' Bul. 675, U. S. Dept. Agr. Revised, Sept. 1919, p. 12.

³ Journ. N. Y. Ent. Soc., Vol. I, 1893, p. 17.

⁴ Farmers' Bul. 1065, U. S. Dept. of Agriculture, Oct. 1919, p. 9.

of birds, in the stomachs of which adults have been found by the Biological Survey. This list can now be increased to five species: the Kingbird, Crow, and the Red-eyed, Warbling, and Yellow-throated Vireos. Beetles of other species of the same genus have been found in stomachs of 11 kinds of birds, namely, the Downy, Hairy and Red-headed Woodpeckers, Kingbird, Phoebe, Wood Pewee, Crow, and the Red-eyed, Solitary, Yellow-throated and White-eyed Vireos.

Striped Cucumber Beetle (*Diabrotica vittata*).—While this is one of the pests that ravage truck crops every year, evidently not being appreciably checked by its enemies, still it is of interest to know what these are. One of the recent bulletins prepared in the Bureau of Entomology cites from Biological Survey records¹ the names of 15 bird enemies of the striped cucumber beetle. Two names can now be added to the list, viz.: Red-eyed and Philadelphia Vireos.

Grain bug (*Chlorochroa sayi*).—In recent years this species has become a pest of considerable importance in the Great Basin and Southwestern States, blasting the newly formed heads of cereals, to such an extent in some instances as to cause the crop to be cut for forage. Authors of a bulletin on this pest say:² "The offensive odor secreted by the scent glands of *Chlorochroa sayi* has been commonly supposed to protect them from the attacks of predatory enemies." However, the insect has "quite a variety of both vertebrate and invertebrate enemies." The Biological Survey is quoted as authority for reporting the grain bug from stomachs of the nighthawk and western meadowlark, and related species from the stomachs of five other species of birds. The latter list may now be increased to eight, including: Franklin's Gull, Bobwhite, Nighthawk, Kingbird, Magpie, Eastern Meadowlark, Brewer's Blackbird and English Sparrow.

White-grubs (*Phyllophaga*).—These are the larvae of the so-called May-beetles or June-bugs, the more familiar generic name for which is *Lachnosterna*. Their destructiveness, in grain fields, pastures, lawns and elsewhere need not be detailed here: suffice to it say they are among the most important insect pests and constantly receive the close attention of economic entomologists. Mr. John J. Davis, in a recent treatise³ of the natural enemies of *Phyllophaga*, says: "On account of the difficulty of controlling the common white grubs, which pass ninety-five per cent. of their life under ground, their natural enemies are of unusual importance to the farmer." It is of much interest, therefore, that the author in this formal treatise on the enemies of these pests, should state that: "Birds are

¹ Chittenden, F. H. Farmers' Bul. 1038, U. S. Dept. Agriculture, May 1919, p. 10.

² Caffrey, D. J., and Barber, Geo. W. Bul. 779, U. S. Dept. Agriculture, June 1919, p. 31.

³ Bull. Ill. Nat. Hist. Survey, Vol. 13, Art. 5, Feb. 1919, pp. 53-138. Pls. 3-15, 45 figs.

among the most efficient . . . more especially in the newer regions where they are still to be found in large numbers." He mentions 52 species of birds among which probably the crow and the crow blackbird are the most valuable. Mr. Davis has gathered together and abstracted most of the information in economic publications on the bird enemies of Phyllophaga, but his total of 52 species can be largely increased if we take into consideration unpublished records of the Biological Survey. Phyllophaga adults and larvae have been found in the stomachs of 83 species of birds of the United States. The common crow is pre-eminent as an enemy of both adults and larvae. Other birds especially worthy of mention in the latter role (from a total of 15 species) are the Upland Plover, Rusty Blackbird and Robin, and in the former (from a total of 81 species) the following named approximately in the order of their importance: Starling, Crow Blackbird, Meadowlark, Brown Thrasher, Robin, Nighthawk, Chuck-wills-widow, Whip-poor-will, Screech Owl, Kingbird, the five species of *Hylocichla*, and these ten of about equal rank: Red-winged Blackbird, Upland Plover, the two Cuckoos, Flicker, Blue-jay, Catbird, Red-headed Woodpecker, Mockingbird, English Sparrow, Magpie and Towhee.—W. L. M.

Pine-seed Eaters in British Garhwal.—An interesting note on this subject by A. E. Omaston, may be called to the attention of ornithologists. The Chir Pine (*Pinus longifolia*), says¹ the author, is a tree which produces large quantities of edible seeds, but it is eaten by so many animals that one is forced to marvel how sufficient seed survives to bring about the complete natural regeneration which is so characteristic of the species. In this case, as in many others, nature is lavish, providing against all possible losses. Birds mentioned as important consumers of Chir seeds are: Eastern Wood-pigeon (*Palumbus castotis*), a Nutcracker (*Nucifraga hemispila*), two species of Pied-Woodpeckers (*Dendrocopus himalayensis* and *D. auriceps*), and the Black and Yellow Grosbeak (*Pycnorhamphus icteroides*). The article contains also interesting notes on the local distribution and habits of these birds.—W. L. M.

The Ornithological Journals.

Bird-Lore. XXII, No. 1. January-February, 1920.

The Ring-Necked Pheasant. By Verdi Burtch.—Has become quite common in western New York, where it has taken the place of the Ruffed Grouse as a game bird.

Bobbie Yank. By Katrine Blackinton.—Account of a White-breasted Nuthatch.

¹ Indian Forester, Vol. 44, No. 10, Oct. 1918, p. 463.

The Staghorn Sumac. By E. A. Doolittle.—As a bird-attracting shrub.

The Twentieth Christmas Bird Census, brings forth 169 lists from all parts of the country. We notice considerable diversity in the recording of Chickadees. From many localities quite beyond the range of *carolinensis* they appear simply as "Chickadee." At Mt. Holly, N. J., they appear, no doubt correctly, as "Carolina Chickadee," while at Moorestown, N. J., a few miles farther south, the record is of "Black-capped Chickadees." In such a winter as the past one both kinds no doubt occurred in central and southern New Jersey, but at the two localities mentioned the Carolina is certainly the usual one. It would seem better to use "Chickadee" without any qualifying term where there would seem to have been an error. In connection with the lone Tree Swallow at Gardiner's Island, N. Y., it may be of interest to know that this species was quite common at Cape May Point, N. J., on December 31, 1919, flying over the frozen lake and feeding on the wax myrtle berries as observed by the reviewer.

As to the Northern Phalarope at Telford, Pa., to which special attention is called in the introduction, a little investigation would have shown serious doubt as to the correctness of the identification.

The Condor. XXII, No. 1. January-February, 1920.

Autobiographical Notes. By Henry W. Henshaw.

A Return to the Dakota Lake Region. By Florence M. Bailey.—These two continued articles maintain their interest.

Importance of the Blind in Bird Photography. By Frank N. Irving. Illustrated with admirable close-up photographs of the Flicker at its nest, showing more clearly than any pictures that we have seen the method of perching of this species.

The Rusty Song Sparrow in Berkeley and the Return of Winter Birds. By Amelia S. Allen.—A Yukutat Fox Sparrow which was a regular visitor to a feeding shelf was banded and returned the next winter; while a Rusty Song Sparrow, supposedly the same bird, returned for three successive winters. These data are of particular interest in connection with Mr. Baldwin's work (see p. 314).

A Peculiar Feeding Habit of Grebes. By Alexander Wetmore.—The habit of eating feathers practiced by birds of this family may, the author suggests, be for the purpose of providing a "strainer" which checks the passage of fish bones and scales into the intestines until they are fully disintegrated. A brush-like fringe of corneous filaments supposed to serve a similar purpose is present around the pyloric opening in the Anhinga, a bird of similar feeding habits.

Notes on the Limicolae of Southern British Columbia. By Allan Brooks.—Notes on 38 species.

Edward Garner, A Pioneer Naturalist. By H. C. Bryant.

Description of a New *Otocoris* from California. By Harry C. Oberholser.—*O. alpestris sierrae* (p. 34), the Sierra Nevada in California from Placer to Lassen Counties.

The Oölogist. XXXVI, No. 12. December 1, 1920.

Some Nesting Birds of the Palisades Interstate Park. By P. M. Sil-loway.—Including a record of the breeding of the Black-throated Blue Warbler at Highlands, N. Y.

Among the Birds of the Virginia Coast. By B. R. Bales.—This article dealing apparently with Cobb's Island calls attention to the fact that egg-ing is still carried on there (1919) on a large scale.

Bachman's Sparrow in Arkansas. By H. E. Wheeler.—An accom-panying illustration is labelled nest of Bachman's "Warbler," but we suppose this to be an error.

The Oölogist. XXXVII, No. 1. January 1, 1920.

Turkey Vultures Feeding. By Winsor M. Tyler.—A careful piece of observation.

New Hampshire Notes. By S. T. Danforth.—Many records of in-terest.

The Ibis. (11th Series), II, No. 1. January, 1920.

Further Ornithological Notes from the Neighborhood of Cape San Antonio, Province of Buenos Ayres. Part III, Phoenicopteridae-Rheidae. By Ernest Gibson.—The present instalment brings to a close this valuable paper, a supplement as it were, to the 'Argentine Ornithology' of Selater and Hudson, better known and more in demand than ever before since the reputation of Mr. Hudson has become so widespread. In one of his comments upon this work, Mr. Gibson calls attention to the erroneous attitude of the Black-necked Swan in the plate of this species, the neck being curved and the back elevated, whereas this species is one of the "stiff-necked" Swans with a straight back. The Coscoroba Swan, however, does curve the neck as depicted. This error in posture has extended to other "stiff-necked" species as well.

List of the Birds of the Canary Islands, with detailed reference to the Migratory Species and the Accidental Visitors. Part V. Alcidae-Phasi-anidae. By David A. Bannerman.—Another instalment of this carefully prepared paper.

Notes on the Birds of Quetta. By Col. R. Meinertzhagen.—The results of a two years' study of the avifauna of this locality in the high-lands of Beluchistan. In his method of presentation the author attempts a suppression of the subspecies which, like similar attempts in America, causes more or less confusion. The binomial names appear in bold-faced type with the trinomials under them in italic precisely like the treatment of synonyms or references in other papers in the same issue. It seems high time for a universal "Systema Avium" when we encounter so many methods of nomenclature in vogue that it requires some study to ascertain just what the author is trying to do.

Notes on the Birds of Southern Palestine. By Col. R. Meinertzhagen. Another valuable list by the same author, with the same system of nomen-clature.

Ornithology of the Maroccan [sic] "Middle-Atlas." By Captain Lynes.—This paper, while no doubt containing valuable information, is the most remarkable publication to appear in an ornithological journal in the experience of the reviewer. It appears to be the contents of a field notebook printed verbatim, and abounding in abbreviations of the most remarkable sort, marginal dashes, and sentences that have absolutely escaped the editing of either author or editor.

As an example we may quote the following under the Shore-Lark which is called "*Eremophila alpestris* (? *atlas* Whit.):

Coll. 8 ♂ ad., 4 ♀ ad. 23.5 to 10.7; ♂ ad. + ♀ ad. + N., 2e. 2d. 9.6; 1 juv. ab. 12.6 ? R. com. Plat. Almost certainly *atlas* (a specn. sent to Sicily to compare with type).

N. of 9.6 prob. second laying. My first acq. with Plateau, 23.5; shot ♀ carrying "stonefly," obv. to young. From bare breast, think ♂ shares incub.," etc.

Even with a page of explanations of abbreviations, life is too short to take the time to decipher such records!

Bulletin of the British Ornithologists' Club. No. CCXLV. December 8, 1919.

A large number of new forms are described in this issue. Dr. Hartert proposes *Ammoperdix heyi nicolli* (p. 4), Wadi Hof, Egypt; Mr. D. A. Bannerman shows that the two names, *Lanpribus cupreipennis* and *L. olivacea*, refer to the same species and proposes for the Prince's Island (Gulf of Guinea) bird *L. rothschildi* (p. 6); he also names *Cercococcyx mechowi wellsi* (p. 7), from Cameroon, and *Sarothrura somereni* (p. 8), from British East Africa. Messrs. Robinson and Kloss present descriptions of ten new Malay birds and Dr. V. G. van Someren nineteen from Africa. Mr. Stuart Baker describes *Galloperdix spadicea stewarti* (p. 18), Travancore. Capt. Lynes describes *Sitta europaea atlas* and *Erithacus rubecula atlas* (p. 32), from Morocco but his descriptions are very meager and no types are indicated. W. L. Selater presents descriptions of *Spizaetus nipalensis fokiensis* (p. 37), Fokien, China; *Spilornis cheela ricketti* (p. 37), Fokien; *S. c. kinabaluensis* (p. 37), Mt. Kinabalu, Borneo; *S. c. palawanensis* (p. 38). Palawan and *Pernis celebensis steerei* (p. 41), Negros, Philippines. C. Chubb describes *Legatus albicollis successor* (p. 43), British Guiana, and *L. variegatus nevagans* (p. 43), Panama, but gives no data for his types. G. M. Mathews contributes descriptions of two new Australian races.

Bulletin of the British Ornithologists' Club. No. CCXLVI. December 31, 1919.

Stephenson Clarke describes five new birds from Somaliland, including a new genus *Warsanglia* (p. 48), apparently related to *Pseudacanthis* from Yemen, and widely different from any known African bird. But one specimen is known which becomes the type of *W. johannis* (p. 48). J. D. La Touche presents descriptions of four new forms from Hupeh, and

V. G. van Someren sixteen from Africa. E. Hartert describes *Turdus citrinus courtoisi* (p. 52), from eastern China. E. C. Stuart Baker contributes *Carine brama fryi* (p. 60), Madras, and C. Chubb proposes *Serpophaga helenae* (p. 61), Bartica, British Guiana, and *Myiodynastes solitarius duncani* (p. 62), Supenaam and Aarwai Rivers, British Guiana.

Bulletin of the British Ornithologists' Club. No. CCXLVII. January 30, 1920.

Stephenson Clarke describes *Heteromira fra archeri* (p. 64), from British Somaliland; Lord Rothschild, *Ithaginis clarkei* (p. 67), from Yunnan; E. C. Stuart Baker, *Anurophasis malaccensis saturata* (p. 68), N. Sarawak; and C. Chubb, *Pachyrhamphus macconnelli* (p. 73), Bonasika River, British Guiana; *P. albiloris* (p. 73), San Estahan, Venezuela; *P. chapmani* (p. 74), Antioquia Colombia; *P. costaricensis* (p. 74), Bebedero, Costa Rica; and *Empidonomus varius parvirostris* (p. 75), Kamakabra River, British Guiana. G. M. Mathews also proposes seven new forms from Australia.

British Birds. XIII, No. 7. December 1, 1919.

Notes on the Migration of Birds over the Mediterranean Sea. By C. Sufferin.

The Birds of Bardsey Island. By N. F. Ticehurst. Part V.

British Birds. XIII, No. 8. January 1, 1920.

Nesting Habits of the Merlin in Glamorganshire. By G. C. S. Ingram.

The Oystercatcher's Progress towards Maturity. By J. M. Dewar.—A study of the habits and development of nineteen families of these interesting birds from the day of hatching (eight a little later) up to the 23rd and 35th day. A most interesting and important study in behavior. One cannot but think how many nests of the American Oystercatcher have been found and all we have to show are the empty shells of a lot of eggs. Comparatively few "oologists" have any conception of what constitutes the science of ornithology.

British Birds. XIII, No. 9. February, 1920.

On the Nesting of the Storm Petrel. By Audrey Gordon.—On the Inner Hebrides.

British Birds "Marking Scheme." Progress for 1919. By H. F. Witherby. The total number of birds "ringed" now numbers over 91,000 for the eleven years. A list of interesting recoveries is appended to the report.

The Avicultural Magazine. X, No. 14. December, 1919.

Bird Photography at the Zoo. By W. S. Berridge.—With an excellent picture of the Greater Bird of Paradise in display.

The Breeding of My Kagus, All but—. By an Old Australian Bird-Lover.—Interesting notes upon these curious birds in captivity. The unfortunate modesty of the author in concealing his identity prevents others who may be interested from getting in touch with him.

Notes on the Birds of the Balearic Islands. By Philip Gosse. (Continued in January number.)

The Color Question. By an Old Australian Bird-Lover.—Experience and pertinent suggestions as to the effect of food on color.

The Avicultural Magazine. XI, No. 1. January, 1920.

The Manchurian Crane. By W. H. St. Quintin.

The Emu. XIX, Part III. January, 1920.

Notes on Sea Birds. By W. Macgillivray.—Observations from a troop ship to and from England.

Nesting of the White-rumped Swift (*Cypselus pacificus*). By H. L. Cochrane.

Material for a Study of the Megapodidae. By R. W. Shufeldt. Part III. Addenda.—Treats of *Megacephalon maleo* with a colored plate of the head and neck and half-tones of the eggs and skeleton.

Annual Report of the R. A. O. U. and of the Bunya Range Excursion. By A. H. Chisholm; and a list of the birds observed by S. A. White and J. B. Cleland.

South Australian Ornithologist. IV, Part 4. October 1, 1919.

The Weights of Some Australian Birds. By A. M. Morgan.—Birds lose weight rather rapidly after death. Many weights of eggs and their relation to the bird's weight are also given.

Morning Bird Calls. By J. Sutton. Time of morning song during August.

Birds Recorded from the Early Days Up to the Present Time for the Reed Beds District. By S. A. White.

The Austral Avian Record. III, No. 7. December 3, 1919.

Devoted entirely to biographical sketches, with portraits, of the three Australian ornithologists, S. A. White, T. Carter, and W. D. K. Macgillivray. All by Mr. Mathews.

Revue Francaise d'Ornithologie. XI, No. 126-127. October-November, 1919. [In French.]

Inquiry on the Disappearance of the Sparrow. By A. Menegaux.

The Distribution of the Penguins and Its Geological Interpretation. By M. Boubier.

Legends, Prejudices and Emblems Relating to Birds. By F. Cathelin. (Continued in later numbers, to Part 130.)

Revue Francaise d'Ornithologie. XI, No. 128. December, 1919.

On the Protection of Birds in the Province of Quebec. By F. Gaguin.

Revue Francaise d'Ornithologie. XII, No. 129. January, 1920.

An Amateur Bird Guide for One Visiting Africa. By Dr. Millet-Horsin. (Continued.)

Observations on the Song of Birds in Winter. By J. Berlioz.

Der Ornithologische Beobachter. XVII, No. 2. November, 1919. [In French and German.]

A Contribution to the Avifauna of Binntal (Wallis). By A. Hess. (Continued in Nos. 3 and 4.)

Ornithological Notes from the Region of the Bosphorus. By A. Mathey-Dupraz.

Der Ornithologische Beobachter. XVII, No. 4. January, 1920.

The Summer Life of the Starling. By H. Fischer-Sigwart.

Le Gerfaut. 5-9 Ann. Fasc. I, 1919. [In French.]

This is the first issue since the German occupation of Belgium in August, 1914, as explained in a note to the readers, from which we also learn that the treasurer of the Belgian Ornithological Society was murdered by the Germans at Louvain while the secretary fell on the field of battle at Voltin. The publication, however, starts out again with renewed energy and four issues appeared in 1919.

Biographical Sketch of Alfred Sacle.

Fauna of Belgium. *Buteo buteo zimmermannae*. By G. van Havre.

An American Bird New to the Fauna of Belgium. By M. de Conterras.—*Larus fuliginosus*.

Le Gerfaut. 5-9 Ann. Fasc. II, 1919.

Ornithological Observations from 1914-1918 at Wyneghem. By G. van Havre.

Remarks on the Life of the Cuckoo. By M. Mairlot.

Birds and the War. Migration in the Eastern Region. By L. Coopman. (Continued.)

Fauna of Belgium. *Cinclus cinclus cinclus*. By G. van Havre.

The Food of the Starling. By A. Mercier.—Mainly from Collinge's paper.

Le Gerfaut. 5-9 Ann. Fasc. III, 1919.

The Red-throated Pipit. *Anthus cervinus*. By L. Coopman.

The Yellow Bunting. *Emberiza citrinella citrinella*. By M. Mairlot.

Habits of the Cuckoo. By A. Paque.

Le Gerfaut. 5-9 Ann. Fasc. IV, 1919.

Brunnich's Murre in Belgium. By C. Dupond.—Specimen proves to be *Alca torda*.

Ornithologische Monatsberichte. Vol. 23, No. 9. September, 1915. [In German.]

We have before us this complete set to the end of 1916. The principal papers are listed below with all new forms.

On the Migration of Gannets into German Binnen Land. By H. Schalow.

Ornithologische Monatsberichte. Vol. 23, No. 10. October, 1915.

New Species. By Reichenow. *Tanagra ehrenreichi* (p. 154) Hyntanaham, on the upper Purus; regarded as probably a race of *T. coelestis*; *Anthus leucocraspedon* (p. 155), Wendhuh, S. W. Africa. No type specimens mentioned as is unfortunately the custom of this author.

The Geographical Forms of *Corythornis*. By O. Neumann.—Recognizes four: *C. c. cristata*, Madagascar and Comoren Island; *C. c. galerita*, tropical Africa; *C. c. nais*, Prince's Island; *C. c. thomensis*, St. Thomas.

Ornithologische Monatsberichte. Vol. 23, No. 11. November, 1915.

Nomenclatural Remarks on the Genus *Alcedo* Linn. By A. Laubmann.

Ornithologische Monatsberichte. Vol. 23, No. 12. December, 1915.

Birds of Northern France. By H. Boeker.

New Tropical Birds. By O. Neumann.—*Paleornis krameri borealis* (p. 178) Assam; *Chalcopsittacus duyvenbodei syringanuchalis* (p. 179) Stephansort, New Guinea; *Opopsitta nigrifrons ramuensis* (p. 180), Bismark Mts., New Guinea; *Tanyptera nigriceps leucura* (p. 180), Rook Island, near New Guinea; *Pitta brachyura beryllofulgens* (p. 181), a specimen bought in Calcutta; *Graucalus caledonicus thilenii* (p. 181), New Hebrides; *Graucalus macei andamanus* (p. 181), *Chaetura ussheri senegalensis* (p. 182), Thies, Senegal.

Ornithologische Monatsberichte. Vol. 24, No. 1. January, 1916.

Nomenclatural Remarks on the Genus *Alcedo* Linn. By A. Laubmann. (Continued.)

Wasp Enemies Among Birds. By E. Hesse.

Ornithologische Monatsberichte. Vol. 24, No. 2. February, 1916.

Ornithological Observations in Husum (Germany). By W. Hagan.

New Birds from Siam. By N. Gyldenstolpe.—*Alseonax siamensis* (p. 27), Bang Hue Pong, N. Siam; *Gerygone griseus* (p. 27), Koh Lak, Siamese Malakka; *Turdus aureus angustirostris* (p. 28), Koon Tan, N. Siam; *Lanius hypoleucus siamensis* (p. 28), Koh Lak; *Picus vittatus eisenhoferi* (p. 28), Pa Hing, N. Siam; *P. canus hessei* (p. 28), *Brachylophus chlorolophoides* (p. 29), Koon Tan, N. Siam; *Sphenocercus pseudo-crocopus* (p. 29), Bang Hue Pong, N. Siam.

Ornithologische Monatsberichte. Vol. 24, No. 3. March, 1916.

On the date of publication of Pallas' 'Zoographia Rosso-Asiatica.'

By E. Hesse.—Date of 1811 as printed on the title page is endorsed.

Ornithologische Monatsberichte. Vol. 24, No. 4. April, 1916.

New Forms from Africa. H. Freiherr Geyr von Schweppenbergr.—*Pterocles lichtensteini targius* (p. 56), Quelle Tahart; *P. l. abessinicus* (p. 57), Dire Daura; *Columba livia targia* (p. 58), Ain Tahart; *Turtur t. hoggara* (p. 59), Ideles am Nordrande, Hoggar Plateau; *Cotyle rupestris spatzi* (p. 59), Gara Djenoun.

On Rhynochetos. By Reichenow.—Account of the structure of the Kagu with cut of the bill and nostril.

On the Name *Columba pallida* Lath. By E. Hesse.

Ornithologische Monatsberichte. Vol. 24, No. 10. October, 1916.

New Species. By Reichenow.—*Cinnyris schillingsi* (p. 154), Kilimanjaro; *Sylvietta carnapi dilutior* (p. 154), Ruwenzori; *Certhia brachydactyla lusitanica* (p. 154), and *Parus ater lusitanica* (p. 154), both from Oporto, Portugal; *P. brunescens* (p. 154), Kubub in Namaland; *Carpospiza brachydactyla psammochura* (p. 155), Kousha, Beluchistan.

Ornithologische Monatsberichte. Vol. 24, No. 11. November, 1916.

Lagonosticta rhodopareia neglecta (p. 168), Portuguese Guinea; *Estrilda astrild niediecki* (p. 168), Nanneala, Rhodesia; *E. a. adesma* (p. 168), Kissenji, Kiwusee; *E. incana hapalochroa* (p. 168), *Pseudospermestes microrhyncha* (p. 168), West side of Victoria Nyanza; *Munia calaminoros* (p. 169), New Guinea; *Parus palustris balticus* (p. 169), Bialowies.

Ornithologische Monatsberichte. Vol. 24, No. 12. December, 1916.

New African Pycnonotidae. By Reichenow.—*Bleda notata pallidior* (p. 180), Loango; *Phyllastrophus zenkeri* (p. 180), and *P. albigularis adametzi* (p. 181), both from Camaroons; *P. placidus munzneri* (p. 181), Munzner, Mahenge; *Andropadus gracilirostris congensis* (p. 181), Leopoldsville, Congo; *Pycnonotus xanthopygus palaestinae* (p. 181), Jafa, S. Palestine.

Journal für Ornithologie. Vol. 63, No. 4. October, 1915. [In German.]

Characters of the Flight-Feathers of the Birds of N. W. Germany. By H. Reichling.

Hans Graf von Berlepsch. By C. E. Helmayr.—Portrait and bibliography of 84 titles.

Some Noteworthy Records of German Birds in the Royal Zoological Museum at Berlin. By E. Hesse.

Journal für Ornithologie. Vol. 64, No. 1. January, 1916.

South Somaliland as a Zoogeographical Province. By O. Graf Sedlitz. (Continued.)—The following are proposed as new, all from Afgoi: *Oriolus larvatus reichenowi* (p. 1); *Gymnoris pyrgita reichenowi* (p. 42); *Serinus dorsostriatus harterti* (p. 47), *Anthreptes longmani neumanni* (p. 73); *Apalis flavidula neumanni* (p. 89); *Cichladusa guttata mulleri* (p. 108).

A Contribution to the Avifauna of Hesse Nassau. By W. Hagan.

Materials for a Revision of the Genus *Campephaga* Vieill. By O. Neumann.—Seven forms and several "aberrations" are listed.

Journal für Ornithologie. Vol. 64, No. 2. April, 1916.

A Contribution to Our Knowledge of the Ornithology of Saxony. By R. Heyder. (Continued.)—This instalment contains a bibliography of 415 titles and enumerates 62 species.

On the Elevations to Which Birds Range. By H. Krohn.—A miscellaneous compilation.

Remarks on Some Forms of Sylviidae. By E. Hesse.—*Hippolais pallida* and *caligata* and *Calamoherpe brehmii*.

Journal für Ornithologie. Vol. 64, No. 3. July, 1916.

A New Catalogue of the Birds of Germany. By E. Hesse and A. Reichenow.—Nomina conservanda are recognized, and the International Code is ignored.

War Observations in Belgium and France. By J. Gengler.

Journal für Ornithologie. Vol. 64, No. 4. October, 1916.

Report on Ornithological Observations at Rossiten for 1915. By J. Thinemann.

Remarks on Some Turkestan Birds. By P. Kollibay.

Ardea. VIII, No. 2. November, 1919. [In Dutch.]

Dr. Coenraad Kerbert. Obituary with Portrait.

Arrival of Certain Migrant Birds in Holland in 1918. By H. Ekama.

Migration of the Swift (*Apus apus*). By A. E. H. Swaen.

Condition of the Cormorant Colonies in Holland. By G. J. Van Oordt.

Communication on the Breeding Birds of Holland. By T. de Vries.

Ornithological Articles in Other Journals.¹

Shufeldt, R. W. Osteological and Other Notes on the Monkey-eating Eagle of the Philippines, *Pithecopaga jefferyi* Grant. (Philipp. Jour. Sci., XV, No. 1. July, 1919.)—Eleven plates from photographs of the skeleton of this and other species.

Criddle, Norman. Birds in Relation to Sunflower Growing in Manitoba. (Canadian Field Naturalist, November, 1919.)

Oberholser, H. C. A New Cliff Swallow from Canada. (Ibid.)—*Petrochelidon albifrons hypopolia* (p. 95), Fort Norman, Mackenzie. Ranges from central Alaska over western British America to Alberta and Montana.

Fleming, J. H. Birds of Northern Saskatchewan and Northern Manitoba Collected in 1914 by Capt. Angus Buchanan. (Ibid. December, 1919.)

Stephens, T. C. Records of the Past Winter (1917-1918) in the Upper Missouri Valley. (Proc. Iowa Acad. Sciences, XXV, pp. 71-83. 1919.)

Stephens, T. C. Birds of Union County, South Dakota. (Ibid. pp. 85-104.)

Gabrielson, Ira N. A List of the Birds Found in Marshall County, Iowa. (Ibid. pp. 123-153.)

Allen, A. A. Illustrated Articles on the Gulls and Terns; Rails, Coots and Gallinules; Herons; Loons and Grebes. (American Forestry, XXV, pp. 1291, 1000, 1229, 1419.)

Gates, Moody B. Protecting Birds as an Act of Patriotism. (Ibid. p. 1063.)

Wetmore, Alexander. Description of a Whippoorwill from Porto Rico. (Proc. Biol. Soc. Washington, 32, pp. 235-238. December 31, 1919.)—*Setochalcis noctitherus* (p. 235).

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Harper, Francis. A New Subspecies of *Prunella modularis* from the Pyrenees. (*Ibid.* pp. 243-244, December 31, 1919.)—*P. m. mabbotti* (p. 243), Saillagouse, France.

Wetmore, Alexander. A Note on the Eye of the Black Skimmer (*Rynchops nigra*). (*Ibid.* p. 195, December 31, 1919.)—The pupil was found to contract in sunlight to a narrow vertical slit as in the eye of the cat, a peculiarity unique among birds in the experience of the writer.

Lincoln, F. C. Some Notes on the Plumage of the Male Florida Red-wing (*Agelaius p. floridanus*). (*Ibid.* p. 196, December 31, 1919.) Apparently adult birds but with undeveloped sexual organs had the red shoulder patches very poorly developed and the general appearance of the plumage dull.

Swales, B. H. A Former Record of the Heath Hen (*Tympanuchus cupido*) at Washington, D. C. (*Ibid.* p. 198, December 31, 1919.)—Based wholly upon an entry by Prof. Baird of a specimen, since destroyed, recorded as secured at Washington, April 10, 1846, by Dr. Alex. McWilliams.

Oberholser, H. C. *Pagophila eburnea* versus *Pagophila alba*. (*Ibid.* p. 199, December 31, 1919.)—Upholds the applicability of *Larus albus* Gunnerus.

Oberholser, H. C. The Status of the Genus *Asarcia* Sharpe. (*Ibid.* p. 200, December 31, 1919.)—Regards it as a full genus instead as a sub-genus of *Jacana* as usually held.

Oberholser, H. C. The Names of the Subfamilies of Scolopacidae. (*Ibid.* p. 200, December 31, 1919.)—Agrees with Lowe as to the recognition of three subfamilies but would change the names of them to Scolopacinae, Canutinae and Numeniinae.

Oberholser, H. C. Notes on the Names of *Halobaena caerulea* and *Prion vi tatus*. (*Ibid.* p. 201, December 31, 1919.)—Differs from Mathews in regarding Forster's *Procellaria vittata* as a tenable name for the "Blue Petrel," which therefore becomes *Halobaena vittata*. This of course precludes the use of Gmelin's *Procellaria vittata* of later date, for the *Prion* which must become *Prion forsteri*.

Oberholser, H. C. Mutanda Ornithologica. VIII. (*Ibid.* pp. 239-240, December 31, 1919.)—*Turdus sordidus* Müller being an older name for *Pitta atricapilla*, it must become *P. sordida*. *Riparia paludicola sinensis* being preoccupied becomes *R. p. chinensis* (Gray). *Stoparola melanops* for the same reason becomes *S. thalassina* (Sw.), while *Hemipus obscurus* becomes *H. hirundinaceus* (Temm.) and *Tachyphonus rufiventris* will be known as *T. metallactus* nom. nov. (p. 240).

Ober, E. H. The Life History of the Sage Hen. (California Fish and Game, January, 1920.)

Gunthorp, Horace. Bird Collections for Colleges and High Schools. (School and Society, VII, May 1918.)—Suggests the use of colored pictures of birds for seasonal exhibits of birds present at a given locality as a substitute for a collection of the birds themselves.

McAtee, W. L. Good Birds and Bad Birds. (Twenty-first Biennial Rept. Kansas State Board of Agriculture, 1917-18.)—Published 1919. An excellent resume of the subject of economic ornithology.

Krum, Olin C. The Progress of Wild Life Conservation Work at Cornell. (Bull. Amer. Game Protect. Asso., October, 1919.)—A most interesting illustrated account.

LaDue, H. J. The Protection of Winter Birds. (*Ibid.*)—Admirable suggestions on this matter.

Holland, R. P. Federal Government to the Rescue of the Egrets. (*Ibid.*)—Describes the seizure of egrets in the hands of wholesale milliners and plume hunters in Florida and calls the attention of women to the fact that they are now liable to prosecution if they appear on the street wearing egrets.

Holland, R. P. Egg Destroying Vermin. (*Ibid.*, January, 1920.) Calls attention to the attitude of all game-keepers against all hawks as well as various gulls and other birds which destroy eggs. The breeding of game of course creates abnormal conditions on the breeding grounds and attracts predaceous animals. The outlawing of all of the latter regardless of what their original character may have been is the next step. At every move, however, we are further upsetting the balance of nature. Where it will eventually land us it is difficult to say.

Brownell, L. W. Getting Acquainted. (Blue Bird, XII, 1919-1920.) A series of illustrated accounts of our familiar birds.

Bowen, Georgia M. The Way of the Protectionist. (*Ibid.*) A serial on the history and method of bird protection.

Bowles, J. Hooper. Nesting Habits of the Cowbird. (The Oologists' Exchange and Mart, November, 1919.)

DeBeaufort, L. F., and DeBussy, L. P. Birds of the East Coast of Sumatra. (Bijdr. tot. de Dierkunde, XXI, pp. 229-276.)—List of 282 species, with annotations and a map. None new. [In Dutch.]

Virchow, Hans. The Possible Movements of the Vertebral Column of the Flamingo. (Archiv. für Anatomie und Physiologie, IV, pp. 245-254. 1916.) [In Dutch.]

Currie, C. C. Birds of a Gippsland Garden. (Victorian Naturalist, XXXVI, No. 6, October, 1919.)—Popular account of familiar Australian birds.

Gillespie, T. H. The Breeding of the King Penguin. (Nature, CIV, p. 314, November 20, 1919.)—This describes the breeding in the Zoological Garden at Edinburgh of birds received in 1914 and 1917 from South Georgia Island. An egg laid September 1 hatched October 24 (7 weeks and 4 days). The young was small and the skin bare, but it grew rapidly. It was kept at first between the parent's feet and covered by the skin fold as was the egg. It was fed on disgorged, partly digested fish.

Ochoterena, Isaac. The Geographic-Botanic Regions of Mexico. (Boletín Soc. Mex. Geogr. y. Estadist., VIII, part 2, 1919.)—Considers animals also. [In Spanish.]

Oberholser, H. C. An All-day Bird Trip at Washington; D. C. (Amer. Midl. Nat., VI, pp. 103-110, 1919.)

Duerden, J. E. New Adaptive Callosity in the Ostrich. (Records Albany Museums, Africa, III, No. 3, September 30, 1919, pp. 190-195.) A median ankle callosity has apparently become hereditary while an accessory one has not.

Philpott, Alfred. Notes on the Birds of Southwestern Otago. (Trans. and Proc. New Zealand Institute, LI, September, 1919, pp. 216-224.) Thirty species listed.

Duerden, J. E. Breeding Experiments with the North African and South African Ostriches. V. Crossing the N. and S. African Ostriches. (Bull. No. 3, Dept. Agric. Union of South Africa, 1919.)—One hundred hybrids have been raised and two chicks of the second hybrid generation have now been reared.

Bond, C. J. On Certain Factors Concerned in the Production of Eye Colors in Birds. (Jour. of Genetics, December, 1919, pp. 69-81.)

Pearson, K., and Others. On the Nest and Eggs of the Common Tern (*S. fluviatilis*). A Coöperative Study. (Biometrika, XII, Part III-IV, November, 1919, pp. 308-354.)—Mathematical relationship between dimensions and coloration of eggs and structural characters of nests. Some admirable photographs of the birds are presented in illustration.

Rollinat, R. Breeding of the Eagle Owl in Captivity. (Bull. Soc. Nat. d'Acclimat. de France, Year 67, No. 10-11, October-November, 1919.) [In French.]

Bartels, M. On Some Birds New to Java. (Treubia. Recueil de Travaux. Zool. Hydrobiol. et Oceanoogr., August, 1919, I, Pt. 2, Batavia, pp. 51-52.) [In German.]—*Accipiter gularis*, *Eurystomus calonyx*, *Porzana pusilla*, *Tringa canutus*, *Sula longipennis*, *S. sula*.

Oudemans, A. C. Dodo Studies. (Verhandl. der Kon. Akad. Wetenschap. Amsterdam, XIX, No. 4, June, 1917.)—An elaborate historical account of the Dodo and its allies, with bibliographies and lists of published illustrations, many of which are reproduced. The species are given as *Raphus cucullatus* Linn., *Apterornis solitarius* Selys., and *Pezophaps folitarius* Gm. [In Dutch.]

Schouteden, H. Contribution to the Ornithological Fauna of the Lower Congo. (Rev. Zool. Africaine, VII, No. 2, October 1, 1919, pp. 188-192.) Forty species listed.—[In French.]

Hahn, Erna. On Color Perception of Diurnal Birds and the Oil Gland of the Eye. (Zeitschr. Wissen. Zool., CXVI, I, pp. 1-42.) [In German.]—Considers that the secretion of colored oils in the eyes of different species affects the extent of their color perception.

Noll-Tobler, H. Remarks on Our Native Rails. (Jahrb. St. Gallischen Naturw. Gesell., 54, pp. 209-245, 5 plates.) [In German.] An excellent account of the breeding of the Rails of Central Europe, with admirable photographic reproductions.

Duerden, J. E. Methods of Degeneration in the Ostrich. (Jour. of Genetics, IX, No. 2, pp. 131-193, Plates V-VI.)

Soderberg, Rudolf. Results of Dr. E. Mjoberg's Swedish Scientific Expeditions to Australia, 1910-1913, XIII. Studies of the Birds in Northwest Australia. (Kungl. Svensk. Vetensk. Handl., 52, No. 17, pp. 3-116, pl. I-IV, 1918.)—An extended report with many text figures. No new forms are described. [In English.]

Kruimel, J. H. Investigations on the Feathers of Gallinaceous Birds. (Bijdr. tot. de Dierkunde Amsterdam, XX, pt. 2, pp. 1-93, pl. I-IV, 1916.) An exhaustive study of structure, coloration, etc. [In Dutch.]

Thysse, J. P. On Bird Song. (*Ibid.* XXI, pp. 119-122.) [In Dutch.]

Portielje, A. F. J. Biological Observations in the Garden of the Royal Zoological Society. (*Ibid.* XXI, pp. 137-144, pl. III.)—Downy young of *Ardea goliath*, *Pseudogeryon leucanthen* and *Catharista* are shown with their parents in the plate. [In Dutch.]

Additional Publications Received.—**Richmond, C. W.** In Memoriam. Edgar Alexander Mearns. Smithsonian Report for 1917. Reprinted from 'The Auk.'

American Bird House Journal. J. W. Jacobs, Waynesburg, Pa. IV, No. 1, January, 1919.

Bird Notes and News. VIII, No. 8. Winter, 1919.

Bulletin of the Charleston Museum. XV, No. 8, and XVI, No. 1. December, 1919, and January, 1920.

Fins Feathers and Fur. No. 20, December, 1919.

Florida Audubon Bulletin. Florida Audubon Society, Winter Park, Fla. I, No. 3. October, 1919.

New Jersey Audubon Society. Ninth Annual Report. October, 1919.

Scottish Naturalist. Nos. 95-96. November-December, 1919.

Philippine Journal of Science. XIV, Nos. 5 and 6, and XV, Nos. 1 and 2. May-August, 1919.

Records of the Australian Museum. XII, No. 12. December, 1919.

CORRESPONDENCE

An "Occult Food Sense" in Birds.

EDITOR OF 'THE AUK':

Articles dealing with the subject of instincts or intelligence in birds or in mammals have for me a peculiar fascination and are read with much interest. Mr. Beck's article in 'The Auk,' on 'The occult senses in birds,' proved no exception.

The scene pictured by the author was vividly visualized as I continued to read the well written lines. The crisp morning, the music of the speeding hounds, the tingle of eagerness and the keen expectation of the early hunters—then the puzzling change in the whole scene and the end of a stirring fox chase in the prosaic killing of a mad dog.

But with mind absorbed in the captivating account I am still dimly conscious of another scene, which persists in intruding upon the first. High overhead, on motionless wing, soar two black birds, mere specks in the uncertain light. Greater vision would have revealed them as vultures keenly intent upon the drama below, all-hearing, all-observing; but they themselves unobserved, unheard. When the last echo of the gun and the last whimper of disappointed hound and the last sound of human voice had passed away, and all was silent and restored to its wonted order, they began to descend. Rapidly, as they drew near the earth, their sharp eyes and tenacious avian memories which so often before had unerringly guided them on similar missions, led them now into close proximity of the very spot where that something had taken place, which merited their searching investigation. In a time that was incredibly short from the human viewpoint their marvelous eyesight, assisted now by—yes, by a degree of smelling power and also by a "resourcefulness" peculiar to such as are accustomed to seek the necessities of life in many different situations—they soon found themselves before the banquet hall, or, more precisely, the banquet hole.

It may be, however, that after all it was not these particular two birds, for the mental picture is more or less blurred and obscured by a second one, of a pair of vultures soaring above the South Mountain, taking their morning constitutional in sweeping circles that measured their radii—I had almost said in miles—who caught the sound of hound and gun on the still morning air, and "understood."

Now, the whole point I wish to make by all this rambling is, merely, that it seems to me quite unnecessary to call forth an "occult food sense" in order to explain the phenomenon described by the author of the above mentioned article. On the evidence there presented it is not at all clear that the case can not be explained by the operation of senses that are

well known and are possessed by birds as well as by most other animals. While the author, in his analysis of the case, has apparently to his own satisfaction eliminated the question of sight and of smell, he seems to have overlooked the application of a third highly developed faculty, that of hearing, to which reference had already been made, in a general way, in his first paragraph.

One need look no further, it seems to me, than to the remarkably developed functions of sight and hearing in order to arrive at a tenable explanation of the first essential and striking phase of the observation made by Mr. Beck, namely, the coming of the vultures so soon and apparently from nowhere, to the scene of action. The hunters, intent upon the chase, had no thought, most likely, for such things as vultures which even at the very time may have been within the range of the men's vision, or, if not, were at no greater distance than was well within the limits of their own superior senses. Whether seen or heard by the birds the action below was beyond doubt sufficient to bring them nearer the scene, for to respond to such and similar stimuli, signals if you please, we may well believe is a function of their inherited instincts.

And what reason have we to believe that to their well attuned ears the sound of "the voices of the hounds on the twisted night track" was not audible, even from their aerial pathway above the South Mountain? It has been shown, I believe, if my memory serves me aright, from experiments in acoustics, that the voice of the dog possesses a remarkable carrying quality, perhaps greater than that of any other domestic animal, and that it is the last animal sound that the aviator hears in ascending to a great height. It may safely be assumed, therefore, that to certain birds, especially such as the vultures and other birds of prey, the sound is audible to a very much greater distance than we ourselves are able to appreciate, with our limited powers.

Having in the first phases of the phenomenon been directed by either the auditory or the visual sense, or for that matter by both, after having reached the ground it may with sound reason be presumed that a little search, their sharp eyes now ably assisted by some degree of olfactory sense, would soon reveal the object of their quest. The time element, which was three hours or more, seems to me entirely adequate, even should the birds have come all the way from their roosting place on the slope of South Mountain.

As to the analogies drawn by the author from insect life, with respect to a "mating sense," the evidence brought forward seems, in my humble opinion, entirely to lack force even in a "contributive" way, so far as it suggests the existence of a sense different in kind from those which are well known to be present in insects and which have been scientifically proved beyond peradventure. The olfactory sense, if I mistake not, is generally recognized by entomologists as the dominant sense among insects. The degree of refinement it here attains and its "differentiative

capacity" are alike of an order difficult for man to appreciate. But so far as known the difference is one rather of degree than of kind. Applied to the case of the wasp, *Pelecinus*, is not the established olfactory sense sufficient to explain how the elusive males can find the females, thus being drawn forth from their retirement, probably from no such great distances as we may sometimes be led to imagine, and revealing themselves to the comparatively dull visual faculties of the naturalist? Every hunter has experienced a parallel case, hardly less striking, in the magical appearance of swarms of blowflies which arrive to "inspect" his game almost as soon as it is dead. It cannot be seriously questioned, I believe, that the highly refined olfactory sense is adequate to account for all this, and that it is the same in kind as that which brings the bear to the bait from afar and enables the dog to trail his master through the crowded street.

It is not the intention to deny the possible existence in animal life of other senses than the orthodox five that come within the pale of human experience; far from it. That the "homing sense" is a sixth one may well be true. When we shall have learned more about the functions of all parts of the internal ear and shall have added something more definite to our knowledge of what has been called "muscle sense," then this question may possibly be answered with a degree of assurance. While freely admitting the attractiveness and stimulating effect of formulating working hypotheses and theories, the point I wish to emphasize is simply that we should first of all exhaust the explanatory possibilities of the scientifically proven sense functions, in the analysis of observed phenomena where matters of this nature are involved, before proceeding to draw from the realm of the unknown. On the evidence adduced I feel that this procedure has not been followed in the case of the two vultures, and that the assumption of the existence of an "active sense which may be called 'occult'" even "simply because it is hidden from the experience and understanding of man," is not justified.

CHARLES EUGENE JOHNSON.

Department of Zoology, University of Kansas.

The Search for Food by Birds.

EDITOR OF 'THE AUK':

The following remarks suggest interpretations that may be placed upon observations, different from those associated with them by Messrs. Beck and Grinnell in 'The Auk' for January, 1920 (pp. 55-59 and pp. 84-88). In the former article, an occult sense is invoked to account for Turkey Vultures finding the carcass of a mad dog thrown out of sight in a sinkhole by fox hunters. From evidence given in the article, there can be no certainty that the entire performance of killing the dog and throwing it in the hole was not watched by buzzards. Had some of the

birds been sailing overhead at a considerable height (a common habit), probably they would not have been seen by the hunters, yet every move of the latter might have been observed by the birds; the presence and actions of the pack of hounds would almost certainly have attracted the attention of any birds on the wing, even had they just left the supposed nearest roost, eight miles away. Furthermore the observations as reported do not exclude the possibility that the vultures were already in the hole where the carcass was thrown. Either of these suggestions seems easier to entertain than that the buzzards were guided to the carcass by a means outside of human experience.

Certainly in the classic experiments of John Bachman as reported by Audubon (*Orn. Biogr.*, Vol. 2, 1835, pp. 44-49), both Turkey and Black Vultures, showed their absolute dependence for food-finding upon the sense of sight, and ignored food they would have found immediately had they been able to smell, much less had they been possessors of an "occult" food-finding faculty. Consider the following extract, "The most offensive portions of the offal were now placed on the earth; these were covered over by a thin canvass cloth; on this were strewed several pieces of fresh beef. The Vultures came, ate the flesh that was in sight, and although they were standing on a quantity beneath them, and although their bills were frequently within the eighth of an inch of this putrid matter, they did not discover it. We made a small rent in the canvass, and they at once discovered the flesh, and began to devour it. We drove them away, replaced the canvass with a piece that was entire; again they commenced eating the fresh pieces exhibited to their view, without discovering the hidden food they were trampling upon."

Dr. Grinnell's thesis is that certain call-notes may have been fixed by selection on account of their utility in preventing individual birds from seeking food in areas recently searched by another bird. His examples are the Ruby-crowned Kinglet and Audubon's Warbler. The eastern representative of the latter bird, the Myrtle Warbler, is similar in habits and has a very similar call-note. This is uttered frequently whether by the few warblers or perhaps single wintering bird in a given locality, or by the individuals of a perfect swarm of the warblers such as winter in coastwise parts of the Carolinas. In the former case risk of searching the same area twice practically does not exist; in the latter that the same area will be gone over more than once daily is inevitable. In either event the call-note cannot have the significance hypothesized by Dr. Grinnell.

In fact birds do habitually go over the same places. A tree infested by bark-beetles is not freed of its pests by continuous work on the part of woodpeckers; on the contrary they return to it again and again. Our feeding-stations with practically inexhaustible supplies are periodically visited, and tempting as they are, usually do not localize the birds. These have other business elsewhere, but they return. Many observations by the writer, confirmed by comparing notes with others, indicate that vari-

ous birds have more or less regular beats which they cover approximately on schedule. This means they do repeatedly go over the same trees; but in their territory they undoubtedly make excursions, for when we test them by exposing food supplies they quickly find them. Their system of food-finding, like that of various other animals (as ants and mice), is, I am convinced, to look everywhere in their domain. They have all their time for the work, and searching all day every day, in the comparatively restricted area, to which most birds at any given time, appear to confine themselves, it is inevitable that the same spots will be inspected again and again.

The appeal to theory when observed facts really have nothing particularly mysterious about them, seems to be due to taking too seriously the so-called "struggle for existence." Except at the breeding season, an individual bird has practically nothing to do but to search for food. Under anything like normal conditions there must be no great difficulty in securing the required amount. In fact in the case of Audubon's Warbler and numerous other birds of mixed feeding habits there is always available a reserve food supply, in the form of overwintering fruits, upon which the birds can draw at will. Such birds, therefore, distinctly are not under constant pressure of necessity of food-finding. They at least have leisure, though their actions may belie it. In the writer's opinion, all birds, normally, are not in dire straits for food. Of the smaller species, at least, I would say, they make countless unnecessary excursions, they peck a hundred times for each morsel of food secured, they are, they must, they will be busy. This ceaseless unproductive activity in itself is sufficient evidence that the struggle for existence is not the gripping, controlling thing some would believe.

In conclusion I would mention briefly certain other points in the two papers reviewed that seem rather too highly tinged by theory. The sense of direction, admittedly marvellously developed in certain birds, is not entirely occult to man. Australian natives and other savages have been recorded as having it in marked degree and civilized man certainly does not entirely lack it. The wonderful cases of male insects finding females immediately after issuance from their pupal cases certainly are more satisfactorily explicable on the basis of a finely developed tropic sensitivity than on an occult mate-finding sense. Results of experiments certainly support this view, since female moths emerging in indoor cages, as in greenhouses, have attracted numerous males, though the circumstances could not agree in the province of any mate-finding sense that would have developed under natural conditions. In other words, since greenhouses have never been part of the normal environment, an "occult" mate-finding sense developed by natural selection would not take male moths into such a structure. However, a very sensitive tropic reaction would take them there or to any other accessible place where the excitatory object, the female, happened to be.

With respect to Dr. Grinnell's note, it should be pointed out that in winter when the observations were made, insect life, for the most part, does not "move about again." Hibernating insects are relatively stationary and a considerable part of the insect food available to small birds at this season consists of the eggs and chrysalides of numerous insects, and adult scale insects, which do not change location at all. Furthermore, since there is no hard and fast line between non-flocking and flocking birds, any sequestration theory is bound to run counter, to the recognition-mark and related theories. Indeed, does it not appear that theories are best avoided? When facts accumulate sufficiently, their average tendencies, which we are in the habit of calling "natural laws," are apparent of themselves.

W. L. McATEE.

U. S. Biological Survey, Washington, D. C.

[In connection with the oft-quoted Bachman-Audubon experiment which Mr. McAtee once more falls back upon, why cannot some of our ornithologists in the Southern States, where Vultures abound, try this experiment over again? We are not usually willing to accept a statement of this sort without corroboration and why should we not have more light upon this matter?—ED.]

Ridgway's Birds of North and Middle America, Vol. VIII.

EDITOR OF 'THE AUK':

In a monumental work such as Ridgway's 'Birds of North and Middle America,' errors are certain, however careful and competent the worker may be. Part VIII of that work has just been received and I hasten to indicate rather an unfortunate mistake so that correction may be at once undertaken.

On p. 608 appears "*Larus affinis* Reinhardt, Siberian Gull," and its only claim to inclusion in the work appears to be the record of the type described from "Nenortalik, Julianehaab, S. Greenland." I have shown that the type was not referable to the Siberian Gull so-called, but was a specimen of the form of *Larus fuscus* Linné which Lowe had separated under the name *L. f. britannicus*. This has been accepted by all British ornithologists and the entry in Ridgway's synonymy, p. 609, "*Larus fuscus affinis* Kennedy, Ibis, Jan. 1917, 31" refers to this fact and not to the "Siberian Gull." Consequently all the matter under the heading "*Larus affinis*" on pp. 608-609, save that dealing with Reinhardt's specimen and the one above quoted, must be eliminated as not pertinent to the American fauna. The essential references in confirmation read:

Lowe, British Birds (Witherby), Vol. VI, No. I, p. 2. June 1, 1912.

Lowe, Bull. Brit. Orn. Club, Vol. XXIX, p. 119. July 17, 1912.

Iredale, *Ibid.* XXXI, p. 68. March 29, 1913.

Iredale, *British Birds* (Witherby), Vol. VI, No. 12, p. 360. May 1, 1913.

Larus fuscus affinis, *List Brit. Birds Comm. B. O. U.*, 2nd Ed., p. 255. 1915.

Ibid., *British Birds* (Witherby), Vol. IX, p. 10. 1915.

Another less important matter may be here attended to.

On p. 554, Ridgway has used "*Megalopterus minutus atlanticus*" for the Caribbean White-capped Noddy referring to Mathews, 'Birds of Australia,' Vol. II, pt. 4, Nov. 1, 1912, p. 423, but on that page Mathews proposed *Megalopterus minutus americanus* for the subspecies from the Caribbean Sea and British Honduras separating it from the bird from Ascension Island to which he gave the name used by Ridgway. As the name *americanus* has anteriority and was given to the American bird, it should have been used or the matter discussed, but the name is quite ignored. Just previously in his key on the same page, Ridgway defined a form from the Kermadec Islands calling it "*Megalopterus* —?" stating, "I am unable to place this bird." He also noted, "Owing to absence of specimens, I am unable to compare this [*M. m. atlanticus*] form with *M. m. minutus*." Mathews had included the Kermadec Island bird, which he figured and described, with the typical subspecies (from Torres Straits), but later in the 'Austral Avian Record,' Vol. III, No. 3, April 7, 1916, p. 55, has introduced for it the name *Megalopterus minutus kermadeci*.

It is displeasing to me to record such errors in such a magnificent work, but I am sorry to think that probably others may even occur as Ridgway has apologized for lack of first-hand reference to certain works, and there is evidence in the work itself of unverified references in other connections. On p. 797 it is written, "The remainder are names given by an anonymous author and therefore, according to my view, not eligible." On p. 308 he had utilized "*Calidus alba* (Pallas)" but the names in Vroeg's Catalogue must be accredited to Vroeg, otherwise the author is anonymous. "Tunstall's" names are barred also by absolute anonymity.

TOM T. IREDALE.

39 Northwest Ave., Ealing, London, England,
Dec. 26, 1919.

NOTES AND NEWS

JAMES MELVILLE MACOUN, C. M. G., F. L. S., and chief of the Biological Division of the Geological Survey, Canada, died on January 8, 1920, aged fifty-seven. Mr. Macoun was best known as a botanist but had a wide acquaintance with ornithology and ornithologists and as joint author with his father, Prof. John Macoun, of the 1909 edition of the Catalogue of Canadian Birds, his death demands notice in the ornithological press.

Perhaps no one has had as much first hand experience in the less known areas of Canada—Lake Mistassini, James and Hudson Bay, the Churchill and Peace Rivers and Little Slave Lake were all scenes of intensive work by him and he was familiar with the more accessible parts of the Dominion under conditions of the past that will never return again.

One of the most important pieces of work conducted by him was on the Bering Sea Fur Seal Commission, which he conducted with so much satisfaction to his government as to win his decoration C. M. G. (Companion of St. Michael and St. George).

Of late years he did most of his work in British Columbia, and after completing his father's intensive surveys of two cross sections of that province along the lines of the southern railways he was just beginning another along the Grand Trunk Pacific to the north.

Death stayed his hand and work just at the height of his powers when years of preparation and ripening judgment made him most valuable to science, to the institution of which he was an honored member and to his country.

Besides a father and mother, a brother and sister, he is survived by his widow, one daughter, and a host of friends and sorrowing colleagues.—
P. A. TAVERNER.

The following Fellows have been appointed by the President of the A. O. U. to constitute the Committee on Classification and Nomenclature of North American Birds for the year 1920: Witmer Stone, Chairman, Jonathan Dwight, Harry C. Oberholser, T. S. Palmer, and Charles W. Richmond.

The committee held a two days' session in Washington, D. C., February 11 and 12, 1920, and various general matters were discussed in regard to the method of work of the committee and the preparation of a new edition of the A. O. U. Check-List which should constitute the Nearctic volume of the proposed 'Systema Avium' to be gotten up by the B. O. U. and the A. O. U. jointly.

Dr. Oberholser was chosen Secretary of the Committee and many nomenclatural cases which had been considered by the sub-committee

of nomenclature of the old committee were formally passed upon while several new ones were decided. Altogether very satisfactory progress was made.

A case involving the constitutionality of the Migratory Bird Treaty Act, in which the law was sustained by the Federal Court for the Western District of Missouri, has been appealed to the Supreme Court of the United States by the State of Missouri and arguments were heard on March 2, 1920. This case, No. 609, is entitled *The State of Missouri, appellant, vs. Ray P. Holland, United States Game Warden*.

Two very important efforts toward the establishment and maintenance of bird reservations are now attracting much attention. First the drainage of Klamath Lake which threatens the destruction of this valuable reservation. According to the report of William L. Finley in the January issue of 'California Fish and Game,' the building of a dyke has already converted much of the lake into an alkali desert which the director of the reclamation service himself states is of no use for agriculture. Mr. Finley urges appeals to the Californian representatives in Congress while Mr. Pearson, in 'Bird-Lore,' suggests appeals to the Secretary of the Interior (cf. *antea* p. 318).

The other matter is the effort to have part of the Okefinokee swamp on the Georgia-Florida boundary established as a reservation. Timber rights and subleases seem to complicate this effort but much interest has been aroused. There is an excellent account of the enterprise in the Bulletin of the American Game Protective Association for October, 1919, by Dr. J. F. Wilson, Secretary of the Okefinokee Society, while the Biological Survey is also taking an active interest in the matter.

A modification in the Federal bird regulations has been made, allowing the killing of Grebes, Loons, Gulls, Terns, Mergansers, Bitterns, Great Blue, Little Blue, Green and Black-crowned Night Herons where these birds are injurious to and destructive of fishes at public or private fish hatcheries. The birds may only be killed or trapped by the owners, superintendents or bona fide employes of the hatcheries, and all portions of the birds must be entirely destroyed and not possessed, transported or shipped outside the grounds except that they may be presented to a public museum or educational institution.

There has been organized at Seattle, Washington, the Pacific Northwest Bird and Mammal Club which aims to promote social and fraternal relations among the working ornithologists and mammalogists of Washington, British Columbia, Alaska and northern Oregon. The officers for the current year are: President, F. S. Hall, Director of the State

Museum, Seattle; Vice-President, J. H. Bowles, Tacoma; Secretary and Treasurer, Stanton Warburton.

Coöperation is always productive of much good and it would seem that there is a good field in the northwest for just such an organization as this. We trust that those interested in joining the organization will lose no time in communicating with Mr. Hall, and we hope that the club may have a long and prosperous history.

COMPLETE SETS OF 'THE AUK.'—A series of 'THE AUK' now includes 36 full volumes accompanied by two general indexes for the years 1876-1900 and 1901-1910. Owing to the limited editions of the early volumes the number of possible complete sets probably does not exceed 500, but the total at present known is not much more than 150. Sales, destruction of copies, and the death of early members have broken the continuity of series and resulted in the transfer or loss of many volumes. As time goes on some sets now in private hands will pass into the possession of public libraries and the number of such sets now a little more than 60, will increase. Since the appearance of a brief note on this subject in 'THE AUK' for October, 1919, several members have reported the possession of sets and a few series previously incomplete have been completed. The data now available are published in the hope of stimulating further efforts in this direction.

In the following list arranged geographically by states, sets in public libraries are mentioned first and are followed in alphabetical order by those in private hands. Most of the sets are bound and nearly all include the two general indexes. Seven sets (indicated by an asterisk) are practically complete but lack a single volume or part of a volume. In addition to those here enumerated about 20 others are known which lack some of the first six volumes but which may be completed later. It is interesting to note that while these sets are distributed in 27 states, the Philippines, Canada, and England, less than one-fifth are located west of the Mississippi River. Nearly as many are credited to the District of Columbia while the only ones reported from the Southern States are one each in Virginia, South Carolina, Florida, and Texas.

Such a list as this is necessarily incomplete and subject to frequent correction as private sets change hands and gaps are filled in series now incomplete. Members are requested to send to the Secretary any corrections or additions which will increase the accuracy or completeness of the list.

CALIFORNIA—13

California Academy of Sciences,
San Francisco

Leland Stanford, Jr., University,
Palo Alto

Museum of History, Science and
Art, Los Angeles

University of California, Berkeley
Dawson, W. L., Santa Barbara

- | | |
|--|----------------------------------|
| Chambers, W. Lee, Eagle Rock,
Los Angeles | Fowler, Capt. F. H., Palo Alto |
| Evermann, Dr. B. W., San Fran-
cisco | Grinnell, Dr. Joseph, Berkeley |
| Fisher, Prof. W. K., Pacific Grove | Mailliard, Joseph, San Francisco |
| | Morcom, G. Frean, Berkeley |
| | Stephens, Frank, San Diego |

COLORADO

- | | |
|---|-------------------------------|
| Coburn Library, Colorado College,
Colorado Springs | Bergtold, Major W. H., Denver |
|---|-------------------------------|

CONNECTICUT

- | | |
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| Pequot Library, Southport | Bishop, Dr. Louis B., New Haven |
| Watkinson Library, Hartford | Sage, John Hall, Portland |
| Yale University, New Haven | Seton, Ernest T., Greenwich |

DISTRICT OF COLUMBIA—24

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|----------------------------------|-----------------------------------|
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| U. S. Dept. Agriculture, Wash. | Merriam, Dr. C. Hart, Washington |
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| Bailey, Vernon, Washington | Oberholser, Dr. H. C., Washington |
| Bartsch, Dr. Paul, Washington | Palmer, Dr. T. S., Washington |
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| Cooke, Miss M. T., Washington | Riley, Joseph H., Washington |
| Fisher, Dr. A. K., Washington | Stejneger, Dr. Leonhard, Wash. |
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| Henshaw, H. W., Washington | Wetmore, Dr. Alexander, Wash. |
| Hollister, Ned, Washington | Williams, R. W., Washington |
| Howell, A. H., Washington | |

FLORIDA

- Nehrling, H., Gotha

ILLINOIS

- | | |
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| *Illinois State Laboratory of Nat-
ural History, Urbana | Coale, Henry K., Highland Park |
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| Public Library, Chicago | Deane, Ruthven, Chicago |
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| | Osgood, Dr. W. H., Chicago |

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| Indiana State Library, Indianapolis | Butler, Amos W., Indianapolis |
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- | | |
|--------------------------|-----------------------------------|
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MAINE

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Merrill, Harry, Bangor

Norton, Arthur H., Portland

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Enoch Pratt Free Library, Balti-
more

Kirkwood, Frank C., Monkton

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herst
Mass. State Library, Boston
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Cambridge
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Brewster Estate, William, Cam-
bridge
Chamberlain, Chauncy W., Boston
Durfee, Owen, Fall River
Farley, John A., Malden
Jeffries, William A., Boston
Morris, Robert O., Springfield
Phillips, Dr. John C., Wenham
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Wood, Norman A., Ann Arbor

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apolis

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Dille, Frederick M., Valentine

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Brooklyn Public Library
Buffalo Public Library
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Cornell University, Ithaca
Nat. Association Audubon Societies, New York
New York Public Library
N. Y. State College of Forestry, Syracuse
New York State Library, Albany

New York Zoological Park, New York
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*Fuertes, L. A., Ithaca
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Herrick, Harold, New York
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Ohio State University, Columbus

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Laval University, Quebec
McGill University, Montreal
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British Museum Natural History,
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Jourdain, F. R. C, Abingdon
Mathews, Gregory M., Foulis Court,
Fair Oak

T. S. PALMER.

Washington, D. C.

The fifth annual meeting of the Wilson Ornithological Club was held at St. Louis, Mo., in affiliation with the meeting of the American Association for the Advancement of Science, on December 29 and 30, 1919. Fifteen papers, many of them illustrated with lantern slides, were presented and contained much of interest. At the business session plans were laid for renewed activities after the comparative inaction of the war period and the following officers were elected: President, Dr. R. M. Strong; Vice-President, Dr. H. C. Oberholser; Secretary, A. F. Ganier; Treasurer, G. L. Fordice; Editor, Dr. Lynds Jones; Councillors, Dr. M. H. Swenk, Dr. B. R. Bales, and Dr. T. C. Stephens.

CORRECTION.—In the list of members of longest standing in the A. O. U., published in the January 'Auk,' Dr. William H. Fox, of Washington, D. C., was recorded as having been elected in 1885 instead of 1883. This unfortunate error originated in the earliest lists of members (Auk 1886 to 1890) from which our data were copied. Dr. Fox is therefore outranked only by the nine surviving founders of the Union.

ERRATA.—In the list of contributors to the Brewster Memorial Fund, printed in the January number of 'The Auk,' the names of Messrs. Chauncy W. Chamberlain and Thomas E. Penard were accidentally omitted. Dr. Edward Waldo Emerson appeared as "Edward M. Emerson," Mr. Howard P. Hottle as "Edward P. Hottle," and Mr. J. A. Hagar's name was spelled "Hager."

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Edited by Dr. Witmer Stone

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Vol. XXXVII

JULY, 1920

No. 3



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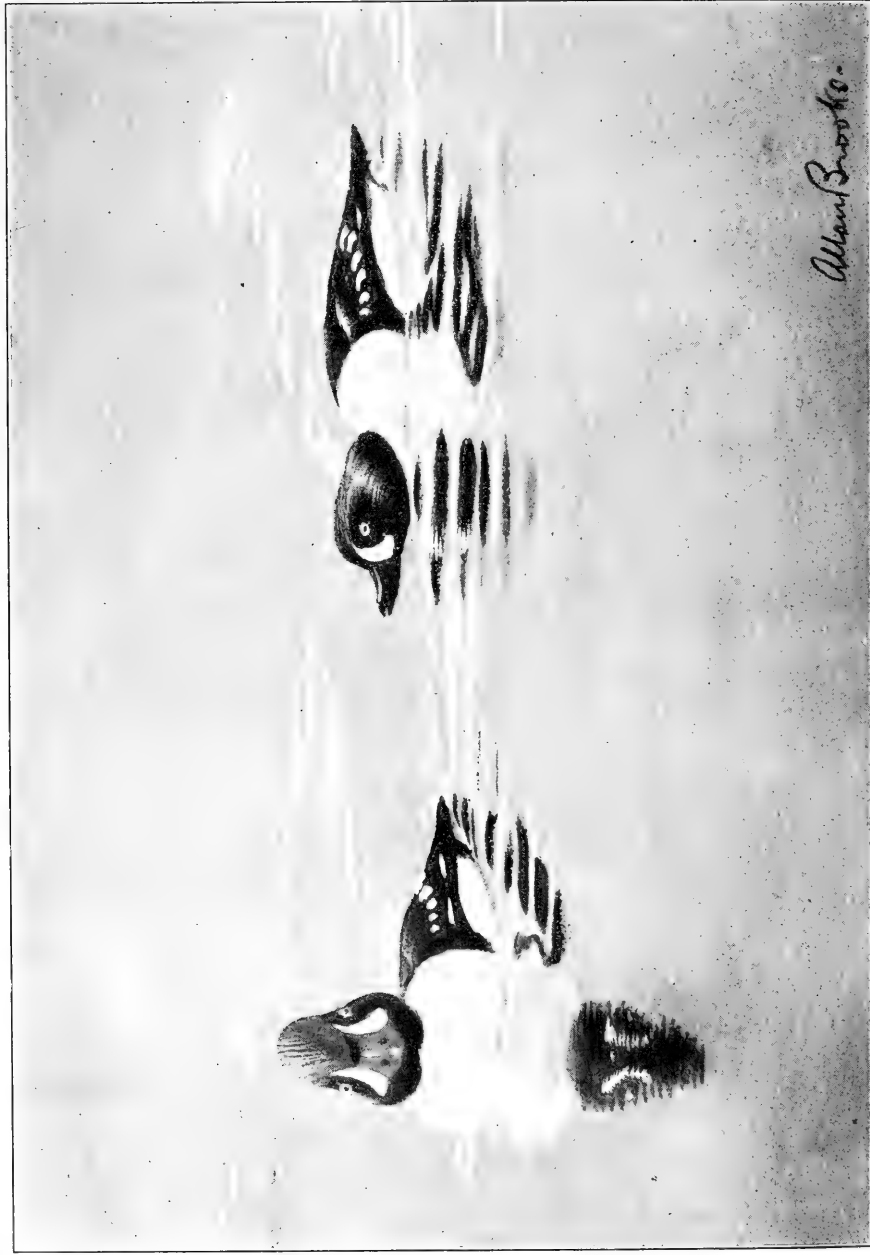
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MALES OF BARROW'S GOLDEN-EYE "CHASING"

THE AUK:

A QUARTERLY JOURNAL OF

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VOL. XXXVII.

JULY, 1920.

No. 3

NOTES ON SOME AMERICAN DUCKS.

BY ALLAN BROOKS

Plates XV-XVI

This contribution has been stimulated by the many valuable papers by American ornithologists on these hitherto rather neglected birds. Mr. Hollister's paper on the Ringneck in 'The Auk' for October 1919 is especially welcome, expressing as it does the first appreciation of the real affinities of this species.

The changes that he proposes for the next A. O. U. 'Check-List' regarding the position of this duck are quite in order, but a more important one is to put the Ruddy Sheldrake where it belongs, its present position in the 'Check-List' being quite impossible.

There is a great deal of work to be done yet even on the commonest of North American ducks especially with the plumages of the females. The variation in these is considerable. In the surface-feeding ducks it consists largely of a decrease in the spotting of the lower surface in many species. I always put this down to age but since I have found that a similar condition found in the larger Falcons, is really an individual variation without any change through successive moults, I am inclined to wait until observations are recorded of female ducks in captivity.

The variation in the females of the diving ducks is not as a rule so pronounced, but it occurs in many species.

Marila americana. REDHEAD.

There is a very frequent tendency to albinism in the female Red-head, not in the male. Adult females are almost always plentifully sprinkled with white feathers on the back of the head and neck; this is accompanied by a varying amount of white in the down. I have carefully plucked the outer feathers from a number of females, the down on the lower surface may or may not be white. The amount of white in the down seems to parallel the amount of white in the feathers of the head, very rarely is the down continuously white but is usually marbled with patches of dusky colored down. The fattest birds very often have the largest areas of white in the down on the lower surface, it may be that the down may not be properly pigmented because of the heavy layer of fat.

On the lake in front of my house at the present moment among the hundreds of Redheads is a female with an almost entirely white head, the body being quite normal.

The variation in the numerical strength of the sexes according to season is probably as pronounced in this species as in any duck. At present (November), the proportion of females to males is about 2 to 3, in midwinter, (January), one hardly sees a female in the large flocks of males, and not until the end of February are the proportions anything like equal. A similar sequence occurs in nearly every species of duck at this latitude, with the possible exception of the Mallard, in which the sexes are usually proportionate throughout the year.

Marila marila. SCAUP.

The A. O. U. 'Check-List' gives this species as breeding in southern British Columbia; I can find no reliable record of this, and consider it in the highest degree improbable, as I have never seen the species in summer even as far north as I have been in central British Columbia, (lat. 54°), except for a few crippled birds.

Marlia affinis. LESSER SCAUP.

This is a common breeder in central British Columbia (the region between Quesnelle Lake and Lac la Hâche), but a scarce one in the southern portion of the province.

Unlike the larger species the females are very variable, in many fully adult and breeding birds there is no white at the base of the bill, the whole head being light brown; in others the head is very dark brown with a conspicuous white patch on the face, as in the Greater Scaup. These dark birds very often have the back freckled with white, a character I have not noticed in the light brown headed birds, in which the whole body plumage, except the breast and belly, is uniform light brown.

Marila valisineria. CANVAS-BACK.

Breeding range exactly as in the Lesser Scaup. Southern breeding records are Lumby—one pair in 1902, and Grand Forks—three pairs in 1919.

Marila collaris. RING-NECKED DUCK.

I can completely endorse all that Mr. Hollister says about this duck. One other point of similarity between it and the Redhead is the color of the downy young, exactly the same in both birds and quite different from the dusky ducklings of the Scaups. When in England I frequently watched the Tufted Ducks very closely, to see points of affinity to our Ringneck. The full plumaged males certainly look very much alike, especially when one sees them diving in shallow water, the whole body being almost enveloped in the light colored flank feathers. They, like the male Ringnecks, are very conspicuous as they dart about along the bottom rising like corks after a short immersion.

But the females are not so much alike, and the young are utterly different, the downy young of the Tufted Duck being the most dusky colored ducklings I know of. And the females and young are a far better indication of affinities than the males. The female of the old world Pochard (*Marila ferina*) is extraordinarily like a female Canvas-back, a female Redhead in the London Zoo ponds alongside of the Pochards looked utterly unlike, both in form and color, but strangely like a couple of female Rosy-billed ducks (*Metopiana peposaca*) which often came alongside of her.

And yet a certain well-known ornithologist in England proposes to make our Redhead a subspecies of the Old World Pochard!

Clangula islandica. BARROW'S GOLDEN-EYE.

This is an attempt to find a reliable method for separating two perfectly distinct species. For Barrow's Golden-eye is a perfectly distinct species and has always been recognized as such, yet it would be more than difficult for an ordinary man to identify a series of specimens by the aid of any of the works of reference I have come across.

Even the best authorities themselves seem uncertain as to the reliability of their points for distinguishing the females and young of the two species.

This has probably led to the slighting references and inadequate descriptions by minor authors.

Barrow's Golden-eye is not a "perpetuated accident of variation" except to those who know nothing of the bird. The adult males are not only easily distinguishable in the hand by at least eight points of difference (including structural) but are readily identified in the field as far as one can separate one species of duck from another.

Millais in his 'British Diving Ducks' is the only author who recognizes this, probably because he is the only one familiar with the species in life.

The crescentic cheek mark, the purplish head, the black wing bar, and the spotted scapulars, are the marks usually given for field identification of the adult male; but the most striking difference is the very black appearance.

Adult males of the Common and American Golden-eyes are very *white* birds, the body looks almost altogether white, just as a male Bufflehead's does, especially when sitting. The adult male Barrow's on the other hand looks to have a body more black than white. The most conspicuous feature of a duck at rest is the flank. Whatever color the flank feathers are, they will dominate the mass of the bird, as they overlap the whole wing and sometimes even a portion of the back.

Thus a fully plumaged Ringneck drake looks to be almost as white as a Scaup, a Black Brant looks more white than black, and so on.

The flank feathers in Barrow's Golden-eye (adult male) are heavily margined with black, fully two-thirds of an inch wide,



1. BARROW'S GOLDEN-EYE. MALES PRUNING. FEMALE ASLEEP.
BARROW'S GOLDEN-EYE COURTING.
MALE IN SWALLOWING ACTION. FEMALE BOBBING UP AND DOWN.

and the black comes almost, or quite, to the water line in front of the wing.

But while a child could distinguish the adult males of the two species, it is a very different matter when it comes to the females and young.

The case of the Cinnamon and Blue-winged Teal is similar, and there are many others where two utterly dissimilar males have females that are almost identical. In the Golden-eyes this has been complicated by the oft-quoted recognition marks that have no value, as they are common to both species.

Perhaps it may be as well to go over the accepted and proffered distinctions for separating *islandica* from *americana*.

1. The wing bar. This is the most often quoted distinction. In the adult male of Barrow's there is certainly a constant and conspicuous black bar separating the white patch on the wing, this is caused by the *basès* of the greater coverts being black. But the bar formed by the black *tipping* of these feathers in the females and young is, as pointed out by Mr. Brewster (Auk, Vol. XXVI, p. 159), an utterly valueless distinction, as both species may or may not have it in different individuals.

Five adult females of Barrow's in my collection have these feathers as follows:

No. 1. Solid black, no bar.

No. 2. Base black, terminal half white with small black tips, forming a slight bar.

No. 3. Tips black, well-defined bar.

No. 4. Trace of spots on tips of two feathers, no bar.

No. 5. Slight bar.

All of these are absolutely identified, being taken in the spring when paired.

The most pronounced bar in a female in my collection belongs to an otherwise typical *americana*, which has all the coverts tipped black, while another has a trace of a bar.

2. Deeper coloring of head and neck in female Barrow's. This is a fairly reliable distinction but it is a *comparative* one. Ridgway in his manual says of *islandica*, "brown of head descending to middle of neck all round." I can see no difference in amount of brown in fresh specimens of the two species; the above distinction probably depends on the make-up of the skin.

3. Wider gray pectoral band. Probably a sound distinction but one which is dependent, in the skin, on a uniform method of make-up.

4. Shape and proportions of bill. The more tapering bill of *islandica* is a thoroughly good distinction, but as given by all authorities it is a comparative one, just as is "bill more goose-like."

How can a man who has only one Golden-eye tell whether the bill is tapering when no measurements are given, or that it is goose-like if he has no example of the other species to compare with it? Ridgway's 'Manual' however has a definite formula as the best distinction between the two species.

"A¹. Height of upper mandible at base, measured from point of frontal angle to nearest point on cutting edge, less than distance from anterior edge of loreal feathering to anterior end of nostril, and usually little if any greater than distance from latter point to tip of upper mandible

G. clangula.

151. *G. clangula americana.*"

"A². Height of upper mandible at base, measured from extremity of frontal angle to nearest point on cutting edge, equal to distance from anterior point of loreal feathering to anterior end of nostril, and much greater than from latter point to tip of upper mandible

152. *G. islandica.*"

I have carefully tested this with the following results:

If the first measurement is taken by placing one point of the dividers on the frontal angle, and the other on the cutting edge, *i. e.*, the chord of the distance around the bill, the results are wrong in one-fourth of my specimens of *islandica*, including one adult male, and wrong in two-thirds of my specimens of *americana* including two adult males.

If this measurement is taken by holding one point of the dividers level with the frontal angle in line immediately above the nearest point of the cutting edge, *i. e.*, the actual height of the former above the latter, the results are hopelessly out in nearly all my *islandica*, but correct for all but one of my *americana*.

If the first portion of the proposition is taken, eliminating the distance from nostril to end of bill, measurements taken by first method, the results are correct in all my *americana*, but wrong in four out of eleven *islandica*. So this distinction, which I had great hopes of, proved a "no thoroughfare."

5. Nail of bill. Ridgway gives width in *americana* female "not more than .20." I have a female with a nail width of .22. In *islandica* female "not less than .23," this holds good even when a very young *islandica* is included, it has a nail .26 wide. Brewster says he is unable to verify this distinction with his series, so it must be reckoned uncertain.

Nail larger and more hooked at tip ('Game birds of California'), also Munro in 'The Condor,' No. 1, Vol. XV. "Nail is wider at the front, projects further over tip of bill, and is slightly raised above the bill forming a noticeable lump."

All of these distinctions hold good but then again, as given, they are mostly comparative.

6. Color of bill. The yellow color of the bill in *islandica* is an oft-quoted distinction and one to which Mr. Brewster attached great faith.

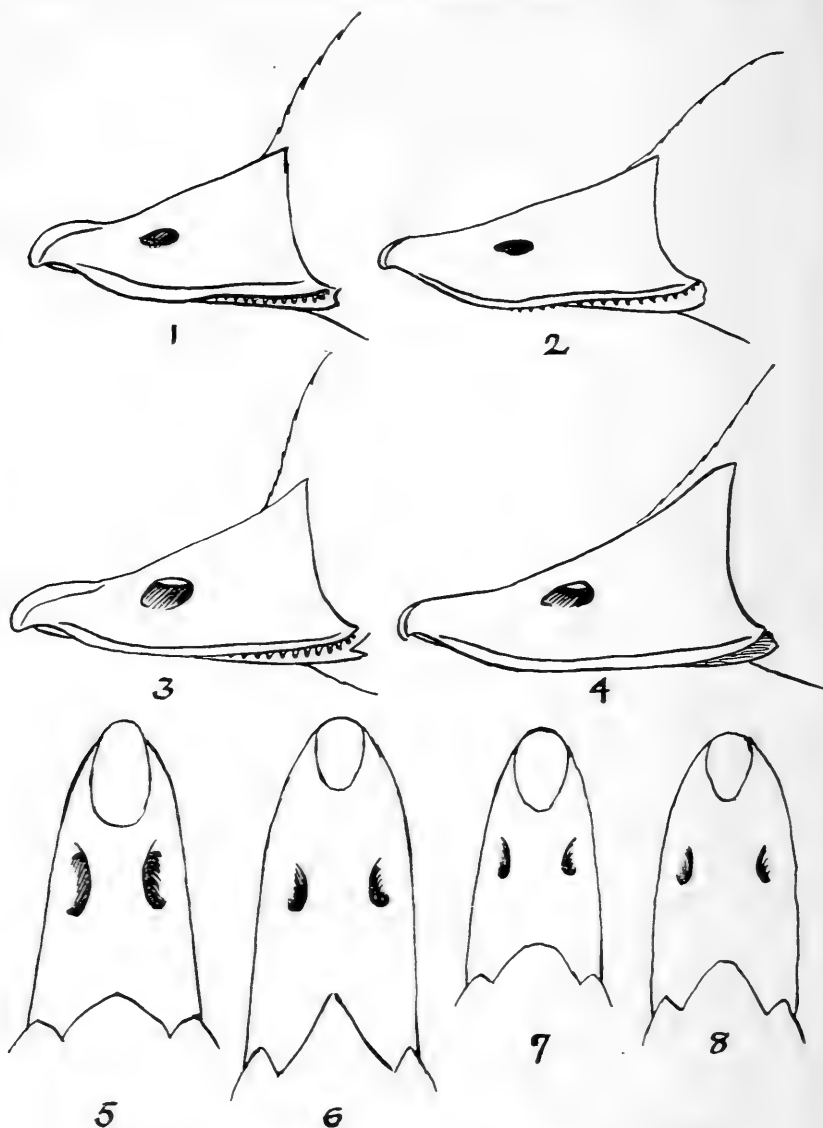
The following facts I can vouch for: Adult females of *americana* usually have a yellow or dull orange bar on the terminal third of the upper mandible, sometimes more than one-third of the bill is yellow and in one instance (and here I speak from memory only) the entire bill orange yellow.

The young of this species have always (?) an olive bill—no yellow.

The young females of *islandica* have an olive, brownish, or blackish bill, no yellow. In the adult females it is wholly orange or cheese-colored, or else the same with the base more or less flecked with dusky. *But this is a seasonal feature only.* During the past summer (1919) I kept a number of breeding females under observation. When pairing with the males in the latter part of April and early in May, *all* had orange bills, even some of the unmated immatures of the previous year had the bill more or less orange. In July, when these same females were each leading a brood on their respective ponds, all had dusky or blackish bills, showing no yellow at all.

So the yellow bill, which can only apply to adult females at best, cannot be relied on at all seasons.

7. Skull. The difference in the shape of the frontal bones has been noticed by several authorities, it is pronounced enough in adult males, but a rather subtle distinction when applied to young birds (see figures p. 362).



- 1 and 7. Barrow's Golden-eye ♀ ad. March 21, 1914.
 2 and 8. American Golden-eye ♀ ad. April 7, 1914.
 3 and 5. Barrow's Golden-eye ♂ ad. April 15, 1911.
 4 and 6. American Golden-eye ♂ ad. March 17, 1891.

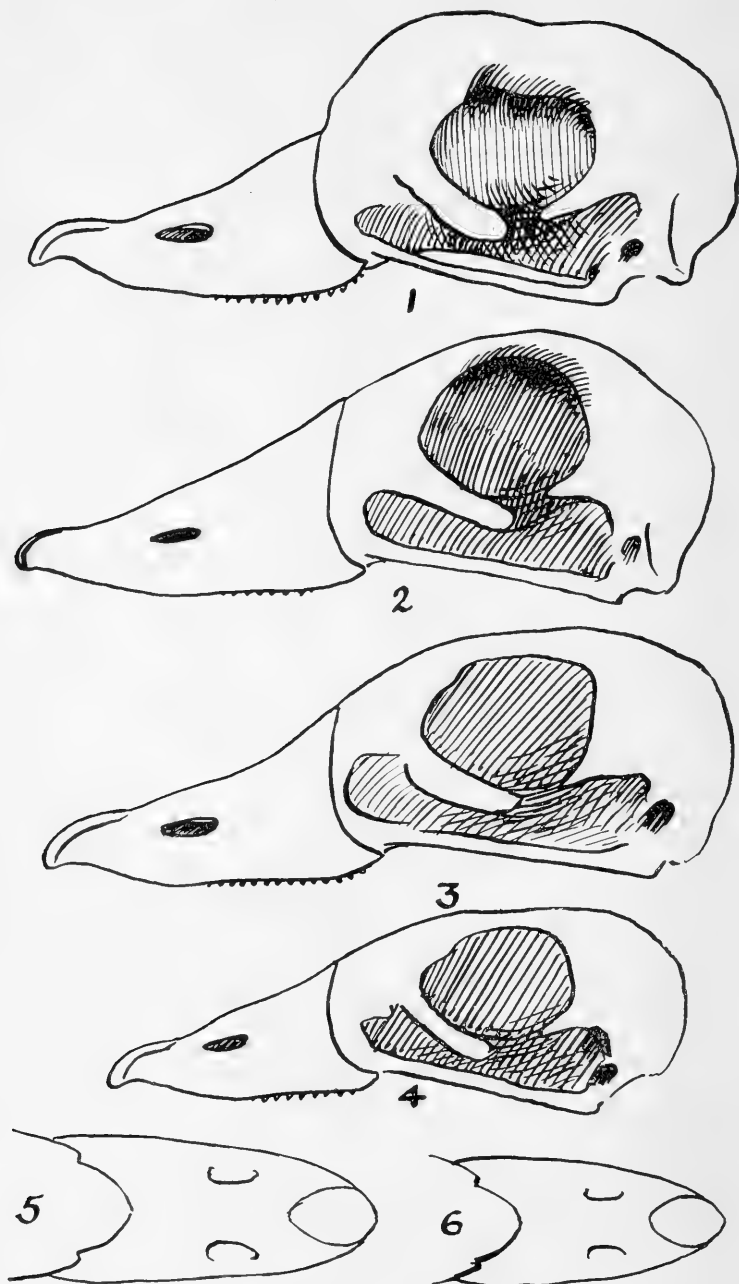
Now the sum of all of this discussion seems to be that it would be easy to wrongly identify a bird of either species from the works of reference available in America, nor do those of European authors, up to and including Millais' very elaborate work, give a really reliable method of distinguishing the two species at all stages. As their main distinction, that of the greater size of *islandica*, only applies when it is compared with the smaller old world subspecies, *C. clangula clangula*. The following attempt to differentiate them may also prove abortive, but it works out well with my series.

This series is small, as events of recent years have interfered with my plan of making a really good series of both species. Still I have eleven thoroughly identified specimens of the rarer bird, and have had exceptional opportunities of identifying these, by taking the paired female of an undoubted male *islandica*, or the young of the same species after watching them through the summer.

Also I have had a very much larger number through my hands, and since my first introduction to Barrow's Golden-eye some twenty-three years ago, I have lived in a region where it is the commonest breeding duck, for the greater part of my time.

This fact must be my excuse for attempting what is apparently a rather difficult undertaking. To get correct measurements, and ones that properly illustrate the differences, has not been easy. First, the nail has ill-defined boundaries in many cases. I have found it advisable to wet the bill to more clearly define these. Second, it has been difficult to get a measurement that shows the very pronounced taper of the bill in *islandica*; if the width is taken near the tip, where it is most prominent, there must be a definite point. Through the base of the nail would seem to be the best, but the longer nail of *islandica* brings this measurement further back in that species, and so makes them more nearly alike than the actual shape of the bill would indicate. Half way between nostrils and base of nail suffers from the same cause, so I have had to take the measurement across the anterior angle of the nostrils although the taper is not so pronounced there.

As Mr. Brewster has done (loc. cit. p. 159), I shall place the characters in what I consider the order of their importance.



1. Barrow's Golden-eye ♂ ad. April 15, 1911.
2. American Golden-eye ♂ ad. March 17, 1891.
- 3 and 5. Barrow's Golden-eye ♂ ad. October 15, 1913.
- 4 and 6. Barrow's Golden-eye ♀ ad. October 15, 1913.

Those relating only to adult males are disregarded as these can be separated by any one without difficulty.

1. *Nail. Americana*—Nail flattened or depressed, not conspicuously raised above the contour of the bill when viewed from the side, and not arched in its transverse section towards base.

Length of nail, ♂, less than .46 in., longest .44, shortest .38, average .406; ♀, less than .40, average .37.

Islandica—Nail arched in both longitudinal and transverse sections, showing as a conspicuous hump above the contour of the bill.

Length of nail, ♂, over .46, longest .53, shortest .48, average .508; ♀, over .40, longest .46, shortest .41, average .43.

2. *Shape of bill. Americana*—Bill not conspicuously tapered when viewed from above.

Width at a point through anterior angle of nostril, ♂, over .69, widest .82, narrowest .70, average .74; ♀, over .60, average .69.

Islandica—Bill conspicuously tapered, width taken as above, ♂, less than .69, widest .68, narrowest .63, average .65; ♀, less than .60, widest .59, narrowest .55, average .57.

3. *Color of head in ♀. Americana*—"Hair brown or grayish amber."

Islandica—"Deep sepia or purplish snuff brown." (Ridgway.)

4. *Shape of Skull. Americana*—Frontals continuing the slope of culmen, without trace of a bulge.

Islandica—Frontals conspicuously bulging in adult males, hardly less so in immature males of second year, bulge distinctly noticeable to the touch in adult females, and faintly so in juvenals.

Something might be made out of the amount of black at base of greater coverts. This is decidedly more in *islandica*, usually showing beyond the overlap of the lesser coverts, and sometimes covering the entire feather. In young males commencing to show the white cheek patch a crescentic formation is sometimes apparent in *americana*, this is due to the fact that the white feathers commence to come in along the edge of the bill, following the curve of its base, but it may be noted that this crescent is confined to the lower portion of the bill, in *islandica* it continues up to the mental angle, even in its first stages.

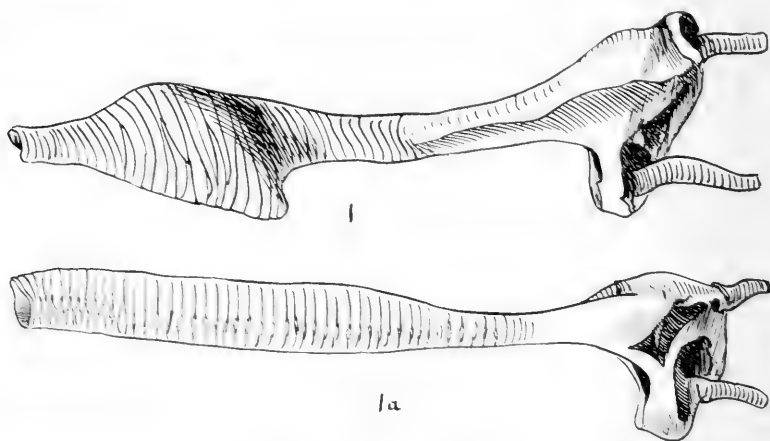
The diagrams of bills appended are drawn from dried specimens, as this will be the condition of most of the birds to be compared with them.

The tomia is apt to roll up and enclose the under mandible in drying, sometimes more on one side than the other, giving the bill a lop-sided appearance.

The top views of the bills of the juvenal male and female *islandica* show a greater length as these are made from skulls, where there is no feathering to cut off the extreme base when viewed in this manner.

The differences in the trachea have been commented on before, but it is as well to include them here, the figures illustrate these. The sketches of courting antics are from a notebook, and were made in the field. (Plates XV and XVI.)

The most common form of display in the drake is the 'swallowing' or 'gulping' action, this may or may not be followed by a kick which throws the water up behind. 'Chasing,' with the head close to or level with the water, and the body sunk, always occurs when one male invades another's territory. The pursuer often dives and comes up under the intruder who then makes off at great speed.



1. Trachea of American Golden-eye.
1a. Barrow's Golden-eye.

Continually between these antics the males preen themselves, frequently turning over on the back.

The females pay little attention to their lords, occasionally they approach bobbing or pumping their heads up and down, and turning the bill from side to side; more rarely they will join in the chase of an intruding male.

Quite often a female will turn her head around, tuck her bill away in the back feathers and calmly go to sleep, oblivious of the display of the drake who seemingly does not care whether his spouse looks at him or not.

Once in November I watched a lone drake going through the whole performance by himself—water-kick and all. When asleep the tail is held up at a good angle, though not such a conspicuous cant as is affected by Ruddy Ducks and Scoters when resting.

Barrow's Golden-eye is a common breeder throughout the arid interior of British Columbia, from the southern boundary north at least to lat. 54, and from 1000 ft. altitude up to at least 6000 ft., wherever the mountain lakes are sufficiently clear of ice to allow them to rear a brood. I have only twice seen the common Golden-eye breeding in this region.

All the drakes, including those of the preceding year (which do not acquire the full plumage until their second autumn), leave for the coast before the middle of June, and before the young are hatched.

The bulk of the females and young follow them about the middle of September as in the case of the Harlequin Duck.

I have so far been unable to actually verify that they do so to the salt water, but hope to during the coming summer.

A few birds may be seen throughout the fall and winter, including adult males. I am inclined to believe these are not the birds that have bred here, but rather migrants from the northeastern districts.

I have found Barrow's Golden-eye fairly common at the coast in the winter, and much tamer than the common Golden-eye.

Oidemia americana. AMERICAN SCOTER.

In British Columbia this Scoter is an exclusively maritime duck, at least I have not come across a single reliable inland record. Not only is it a maritime bird, but it is seldom found in the small bays and inlets where the other species swarm, but frequents the exposed shores and outer reefs together with the Harlequin. It has many points in common with that duck, rising easily from the water and doing much flying about in small lots of four or five—mostly males—seemingly for the pleasure of flying, usually returning to the point they started from.

In flight the silvery under-surface of the primaries, in both sexes, is very conspicuous. In fine calm weather they call a great deal and their plaintive 'cour-loo' is the most musical of duck-cries, very different from the croaking notes of most diving ducks. While very strongly opposed to multiplying genera, I must agree with Dr. Dwight that this Scoter is hardly con-generic with the other two American species, this difference is most pronounced in its actions.

Oidemia deglandi. WHITE-WINGED SCOTER.

This duck throws a good deal of light on the movements of many of the sea-ducks, as its migrations are largely made by daylight. The northward movement is *en masse* in May and very early June, and a large proportion of the flocks migrate diagonally across country in a northeasterly direction. I think the bulk of the Mackenzie River Valley birds migrate across British Columbia. The sexes in the flocks at this time seem to be proportionate.

A few birds of all ages remain on the coast all through the summer—now breeding adults and young birds of the preceding year. Late in July and early in August small flocks of adult males return by the same route, and passing down the inland lakes they arrive on the coast and form very large flocks. As Dr. Dwight has recorded there is no eclipse in the Scoters, these birds are all in worn plumage.

Early in October comes the great migration of the females and young, these are usually in small lots of eight to a dozen—evidently the female with her brood.

They frequently remain on the inland lakes for a few days, forming larger flocks, and then pass on to the coast, a few adult males are with them. None breed in southern British Columbia.

Oidemia perspicillata. SURF SCOTER.

While this is not an exclusively maritime duck, like the American Scoter is with us, its migrations, while generally similar to those of the White-winged Scoter, are much more coastwise. A few, both adults and young, on both the Spring and Fall migrations, migrate across country, but for the real movement one should be about a mile off shore on the salt water.

Along the British Columbia coast for about two weeks in October there is a constant succession of flocks of females and young of this and the preceding species, the numbers that pass must be incalculable.

There is no reliable record of its breeding in the Province, although I have seen them vigorously courting in central British Columbia, well along in June; three or four males whirling about a female on the water like whirling beetles, and uttering a curious low, liquid note, like water dropping in a cavern. Large numbers of both this and the White-winged Scoter die from parasitic diseases (intestinal), but nothing to the thousands that are killed through contact with floating patches of crude oil at sea.

Okanagan Landing, B. C.

RELATIVE ABUNDANCE OF WILD DUCKS AT DEHAVAN, WISCONSIN.

BY N. HOLLISTER.

RECENTLY, in looking over some old ducking records kept by myself and companions at Delavan, Wisconsin, it occurred to me that certain parts of these records are well worthy of permanent preservation. They furnish fairly accurate data on the relative abundance of many species of wild ducks at that time and may serve for important and instructive comparisons with similar figures which may be kept at some future period. It is evident that there has been a considerable change in the relative abundance of various species during the past twenty-five years, and it would be very interesting indeed if we had comparable records for the same region for still earlier times.

From the fall of 1892 until the fall of 1899, inclusive, we occupied a cottage at Delavan Lake each autumn and spring for a week or two of duck shooting. In a book provided for the purpose, complete records were kept of every game bird brought into this cottage. All of the shooting was over decoys in open

water, the blinds being built on the shore, usually on a point extending out into the lake. For this reason the cottage gun record is essentially an open-water record of deep-water ducks. The river ducks were not commonly obtained in such places and comparatively few of them were included in the bags.

In all, 701 ducks, besides geese, snipe, and other game birds, are listed in these records, the species carefully distinguished by their local names. Unfortunately, though, the common practice of duck hunters of lumping the Greater and Lesser Scaups and the Ring-neck under the common name of 'Blue-bill,' was followed in our cottage game book. Although we recognized the three species perfectly we simply followed general custom in keeping them together in such records. From my own recollection, and I examined practically every bird recorded, as well as from a study of my personal ornithological journal covering these years, I should judge that the 270 'Blue-bills' listed in the lake records should be divided about as follows: Lesser Scaup, 60 per cent.; Ring-neck, 35 per cent.; and Greater Scaup, 5 per cent. Sometimes the Lesser Scaup was the commonest, and again, for an entire week, the Ring-neck far outnumbered the other 'Blue-bills.' I find, for instance, in my own bird journal, under general remarks covering the first two weeks of November, 1895, at Delavan Lake, the following:

Ducks were very abundant, even older hunters say they never saw blue-bills so plentiful. The air was fairly dark with them at times; fully 500 or even 1,000 Lesser Scaups to one of any other kind. Did not see a Ring-neck during the two weeks, although this is usually a common species. There were more American Scaups [Greater Scaups] than I have ever seen before, indeed they might almost be said to be common. A few Canvas-backs, Red-heads, Butter-balls, Hooded Mergansers, Golden-eyes, Red-breasted and American Mergansers, Green-wings, Mallards, and Pintails. Canada and Snow Geese common, especially the first; a few Swans also.

Records for a number of successive years must therefore be kept to give any reasonably accurate figures on the relative abundance of the species. Almost every season is exceptional as regards some particular species; either some kind is unusually abundant or some kind is unaccountably rare.

Since these cottage records give us comparable figures only for the deep-water and so-called sea-ducks, I have carefully gone over my daily bird journals for the same eight years—1892–1899—and listed all ducks mentioned, additional to those listed at the lake cottage. These include ducks shot by myself and companions, if I was in company, and such others as were brought to me by sportsmen friends to add to my collection of local birds. These ducks, totalling in number 466, added to the records of the cottage at the lake, give us a fair average for all species and all sorts and conditions of shooting—lakes, marshes, prairie, creeks, and woodland ponds. The total figures, including 1167 ducks, may, I think, be taken as fairly representative of the place at that time. In my own journals I have usually discriminated between the Scaups and the Ring-neck, and in the following totals I have divided the 'Blue-bills' listed in the cottage gun records according to my above estimates as to their relative abundance, on the average, over the eight years period.

Below is a combined list of the 1167 ducks, arranged in the order of numbers handled, with the relative approximate abundance on basis of 100, following the method used by Mr. Aldo Leopold for the ducks of the Rio Grande Valley,¹ in the second column of figures.

RECORD OF 1167 WILD DUCKS KILLED NEAR DELAVAN, WISCONSIN,
FROM 1892 TO 1899.

Species	Number recorded	Relative Abundance per 100
Lesser Scaup Duck (<i>Marila affinis</i>).....	182	15.6
Hooded Merganser (<i>Lophodytes cucullatus</i>)..	156	13.4
Ring-necked Duck (<i>Marila collaris</i>).....	111	9.6
Mallard (<i>Anas platyrhynchos</i>).....	101	8.7
Buffle-head (<i>Charitonetta albeola</i>).....	96	8.2
Golden-eye (<i>Clangula clangula americana</i>)...	70	6.0
Green-winged Teal (<i>Nettion carolinense</i>)....	68	5.8
Wood Duck (<i>Aix sponsa</i>).....	61	5.3
Blue-winged Teal (<i>Querquedula discors</i>)....	49	4.2
Shoveller (<i>Spatula clypeata</i>).....	36	3.1

¹ Condor, vol. 21, p. 122. May, 1919.

Canvas-back (<i>Marila valisineria</i>).....	34	2.9
Pintail (<i>Dafila acuta</i>).....	32	2.7
Baldpate (<i>Mareca americana</i>).....	30	2.51
Redhead (<i>Marila americana</i>).....	30	2.51
Red-breasted Merganser (<i>Mergus serrator</i>)..	25	2.14
Greater Scaup Duck (<i>Marila marila</i>).....	20	1.71
Ruddy Duck (<i>Erismatura jamaicensis</i>).....	18	1.54
American Merganser (<i>Mergus americanus</i>)..	13	1.11
Gadwall (<i>Chaulelasmus streperus</i>).....	10	0.85
Old-squaw (<i>Harelda hyemalis</i>).....	8	0.71
American Scoter (<i>Oidemia americana</i>).....	6	0.49
White-winged Scoter (<i>Oidemia deglandi</i>)....	4	0.34
Black Duck (<i>Anas rubripes</i>).....	4	0.34
Surf Scoter (<i>Oidemia perspicillata</i>).....	3	0.25
	<hr/> 1,167	<hr/> 100 per cent

In estimating the actual relative abundance of the birds, from records of this kind, allowance must be made, of course, for the size of the flocks; as mentioned by Mr. Leopold in the paper above cited. The Golden-eyes, Buffleheads, and Hooded Mergansers, for instance, commonly occur in small groups, and the proportion killed to those seen is far greater than in the case of the 'Blue-bills,' which frequently decoy in very large flocks. The ducks which habitually gather in small bunches are consequently much more rapidly reduced in numbers on an open lake than are the species that occur in great flocks.

Some of the species run about even in the records for spring and fall. With others, the Lesser Scaup and Pintail for instance, the figures for spring greatly outnumber those for autumn. If the Pintail had been as abundant in fall as it was in spring it would have ranked much higher in the above list. The Mallard, Teals, and Wood Duck were protected in spring in Wisconsin during all this period, and consequently were not regularly hunted at that season; so that the figures for these birds are relatively low as compared to those for some other species, like the Canvas-back, Baldpate, and Redhead, which were taken in about equal numbers during spring and fall migrations. The Hooded Merganser, Buffle-head, and Golden-eye were most commonly killed in fall, as follows:

Season	Hooded	Buffle-head	Golden-eye
	Merganser		
Spring (1893-1899).....	14	22	18
Autumn (1892-1899).....	142	74	52
	<hr/> 156	<hr/> 96	<hr/> 70

It is doubtful if records for the present or for any future period will give anything like the above relative abundance. That the records may be equalled in numbers is entirely possible, as they are by no means large as such records go; but I do not believe that ever again will the Hooded Merganser, Buffle-head, or Golden-eye stand so near the top of such a list. These three species have suffered a greater reduction proportionally than have most of the other ducks. On the other hand, the Canvas-back and Redhead are much more common on Delavan Lake than they were during the period covered by this report; and the Black Duck, in that region, is now increasing in numbers year by year. A successful planting of wild celery in the lake accounts for the increase in the Canvas-back and Redhead; but only a general western extension in the regular distribution of the Black Duck would seem to explain the more common occurrence of that species.

Spring shooting, we all hope, has been permanently abolished, and under careful protection ducks may, on the whole, increase in numbers in North America; but certain species, if they do not actually disappear from our fauna, will undoubtedly become very rare within a comparatively short time. There must be, scattered throughout the country, many records of gun clubs, or of individual sportsmen, that might be consulted by those who have the opportunity. If the species are properly distinguished in the lists, accurate data on the former relative abundance of various species of wild ducks may be obtained from them. This exact information can be had from no other source, and in view of the still greater changes that are to be expected in the future, it will become of very great interest and value.

National Zoological Park, Washington, D. C.

RECOLLECTIONS OF AUDUBON PARK.

BY GEORGE BIRD GRINNELL.

Plates XVII-XVIII.

THE interest which we all feel in John James Audubon, and in those connected with him, must plead my excuse for writing this and for the too frequent use of the first person singular.

I spent my boyhood in Audubon Park, and what I have to say relates to members of the Audubon family and chiefly to the woman to whom—quite as much as to her husband—we owe the greatest work on ornithology that America has produced. I should like to give you some impression of the personality of Madam Audubon and her son, John Woodhouse, and to make you see the surroundings of their later lives somewhat as I recall them.

Lucy Bakewell Audubon was a fit mate for her great husband, for her steadfastness and determination supplied qualities which in some degree he lacked. I believe that of the two she was the stronger—as she was the better balanced—character. If she did not have her husband's vivacity, charm, versatility and artistic talent, she possessed characteristics more important: the force to keep him up to his work, the faith to cheer his heart when discouraged, the industry and patience to earn money that he might continue his struggle, and the unyielding will to hold the family together. It was largely through her assistance and support that at last he won success.

A few years after the death of Audubon my father moved to Audubon Park. I was a very small boy about far enough advanced in polite learning to know A from B. At that time Madam Audubon conducted a little school for her grandchildren, which was attended also by some of the neighbors' children, of whom I was one. It was my first attendance at a school.

Except for two houses with the plots of land about them, the whole tract of Minnie's Land, or Audubon Park, then belonged to Madam Audubon. Victor, the eldest son, was bedridden as the result of an accident, and John Woodhouse, a man of great energy,



MRS. LUCY BAKEWELL AUDUBON

managed the property and looked after the sale of the books. The family had abundant land, which was more or less encumbered and quite unsalable, but its resources in money were small and uncertain. I have a vivid memory of an occasion when my father took me with him when he went to see Madam Audubon to conclude the purchase of a piece of land, and of the great relief, satisfaction, and even gratitude, that she expressed to him for his willingness to make the purchase. The scene touched me, even though for years afterward I did not understand its meaning.

John W. Audubon was quite without business training, but he worked hard and faithfully to relieve the family embarrassment. He built several houses in Audubon Park, which were sold or rented, and in a field east of what is now Broadway, built a large frame house which for some years was occupied as a tenement by workmen in the nearby sugar refinery. All these things brought in some money, but there was always a heavy burden of debt.

Madam Audubon was a most kindly, gentle, benignant woman. She was loved and admired by everyone and—by most people—I think a little feared, for she had the repose and dignity of a great lady, and was not given to jokes or laughter. With the children she unbent far more than with older people, and they loved her dearly, and took their small troubles to her with the utmost confidence. Yet the children too stood a little in awe of her, and in her presence were never mischievous or playful at inopportune times. Her grandchildren, of course, called her Grandma, and she became Grandma to many other little ones of different blood.

She lived with her son Victor and the school was carried on in her bedroom, the southeast corner of the second floor of that house. In the schoolroom she was tireless, passing from one child to another, seeing that each was properly at work, helping, explaining, encouraging. During the hours of school each child received a personal supervision that was practically continuous.

She was tall, slender, erect, always clad in black, and always wore her white cap. I never saw her without her spectacles.

The Audubon Park of that day was quite different from what it became later. Except for the land about the Audubon houses, near the river, and that immediately about two houses higher up on the hill, it was a tangle of underbrush and saplings, above

which rose many forest trees, some of them of great size. Much of the land between the present 155th and 157th Streets was overgrown with thick-standing young hemlocks, and no grass grew on the shaded ground. North of 157th Street were the "near woods," so-called, through which ran a brook, and this tract remained wild and unimproved until the year 1870, when it was added to Audubon Park. To the north of 158th Street was a larger piece of woodland. Great white pines stood about the Audubon houses, and on one of them grew a vine of fox grapes, some of which the children always managed to get, after the first hard frost of autumn.

At a little distance from the houses the Hudson River Railroad ran across a wide cove, on an embankment, and the tide from the river rose and fell in the ponds lying between this causeway and the old river bank. In these ponds the boys fished for killies and eels, and in summer went crabbing. In winter the quiet water froze and we had good skating. The ponds were long ago filled up and even their memory has passed away.

The interior of the Audubon House was attractive—an old-fashioned country house, more or less worn and shabby from the tramping and play of a multitude of children. In the hall were antlers of elk and deer, which supported guns, shot pouches, powder flasks, and belts. Pictures that now are famous hung on the walls. In the dining-room facing the entrance from the hall, was the portrait of the naturalist and his dog, painted by John Woodhouse Audubon. The painting of pheasants started by a dog—now in the American Museum—was in the parlor south of the hall, and the picture of the eagle and the lamb upstairs in Madam Audubon's bedroom. Everywhere were vivid reminders of the former owner of the land.

To the north of the Victor Audubon and east of the John Audubon house, on a hillock, was the wooden building with a cellar known as "the cave," where some of the old copper plates were stored for a time. This building was always locked, and the boys seldom had an opportunity to look into it, except when John Audubon opened it and they were permitted to follow him in. John Harden, the man who boxed these plates, died last summer in his eighty-ninth year, on the very borders of Audubon Park, where he had lived for sixty-seven years.

Grandma Audubon gave me my first conscious lesson about birds. I cannot remember a time when the common names of the more familiar species were not known to me, though I presume the list was not a long one. It included, however, the passenger pigeon, which was seen in the dogwood trees each autumn, and the white-headed eagle, which in winter was extremely abundant on the floating ice of the river and sometimes brought its captive fish to the trees in the park, there to eat them or as often to quarrel about them with its fellows, and sometimes to drop the prey.

One of my early recollections is of being called from the breakfast table one morning to look at a large flock of Passenger Pigeons that was feeding in a dogwood tree twenty-five or thirty feet from the house. There were so many of the birds that all could not alight in it, and many kept fluttering about while others fed on the ground, eating the berries knocked off by those above.

Thirty years ago an account was printed in 'The Auk' by Mr. Geo. N. Lawrence of birds at Manhattanville before 1850. Audubon Park was only a mile above Manhattanville, and fifteen or twenty years later than the time written of by Mr. Lawrence, conditions there had not changed. The region was still untouched country. The City of New York had not begun its northward march. On Sixth Avenue the pavements stopped at 23rd Street, and on Broadway the dirt road began at 36th Street.

It was Grandma Audubon who, when I was a little fellow, identified for me a bird that I had never seen before. One morning in late winter, or early spring, on my way to school I had almost reached the Victor Audubon house, when I saw a dozen or twenty small greenish birds feeding on the grass under a pine tree. I approached them slowly, trying to see what they were; and they did not fly, even when I was within a few feet of them. I did not know them, and they were so tame that I resolved to try to catch one. The crabnet used in summer always hung in the area under the Victor Audubon piazza, and backing away from the birds I ran there, secured the net, and returned. It was not difficult for a cautious lad to get near enough to the little birds to pass the net over one, and when I had caught it I rushed into the house and up to Grandma's room, and showed her my prize. She told me that the bird was a Red Crossbill—a young

one—pointed out the peculiarities of the bill, told me something about the bird's life, and later showed me a picture of it. Then after a little talk she and I went downstairs and out of doors, found the birds still feeding there, and set the captive free.

Two or three years later Mr. John Audubon performed a like service for a small companion and me. Neither of the two boys was as yet permitted to carry a gun. But, like some other boys, they managed now and then to get hold of guns, borrowed or stolen, and to go shooting. In the large piece of woods north of 158th Street we saw a flock of birds fly up into a tulip tree, and recognized them as 'pigeons,' but small ones. It happened to be my turn to use the gun, and after appropriate care in stalking I killed one of the flock. As we had supposed, it was a 'pigeon,' unlike those we knew, yet one whose picture we had seen. We found the plate of the bird—a Ground Dove—and to make sure we were right, took the bird to Mr. John Audubon who was mending fence at the corner of 158th Street and Riker's 12th Avenue, and asked him what it was. He looked at it with interest, and told us that it was a Ground Dove, adding that there were many of them further south, but that he had never seen one here before. This may have been in the autumn of 1860 or 1861—not in 1862 as I have said earlier.

After a year or two of attendance at Madam Audubon's school I was sent to a boys' school. For years, however, I took lessons in music and French from a granddaughter of Madam Audubon, daughter of John Woodhouse and granddaughter of Rev. John Bachman, and was always in close association with the family.

A favorite playground of the boys of Audubon Park was the loft of John Woodhouse's barn, where, piled up against the walls, were rows of wooden boxes full of bird skins, collected by the naturalist and his sons. We had been told not to meddle with these, and usually obeyed the injunction, knowing that if we did any harm, this playground would be closed to us. Here in the barn, too, were piles of the old red muslin bound 'Ornithological Biography.' One of these sets was given my father perhaps sixty years ago, but unfortunately the old red covers have been torn off and something more modern substituted for them.

One day in winter a great pine tree in front of the Victor Audubon house was cut down and while splitting it into lengths for



JOHN WOODHOUSE AUDUBON

Dear young friend
George Grinnell

If we should be by
accident on our journey,
it was reel up you can
take possession of the
Eagle & Lamb, with
all the love & esteem
for yourself & Parents
that is possible for our
hearts to feel — Last if
we get safe the Eagle &
Lamb will be in my
will for you —
farewell ever your friend
Lacey Audubon. —

fuel the men found, almost in the center of the trunk, a cluster of small round black objects which proved to be leaden bullets—rifle balls. We boys were tremendously excited by the find and imagined an Indian tragedy where the captive was tied to the tree and tortured by being shot at, as was a common practice of the savage, according to the dime novels of the day. When Mr. John Audubon came up and saw the bullets and the wood, he recalled that many years before his father, some visitors and he had shot rifle at a target tacked upon this tree trunk, and here were the balls revealed by the ax.

When I was twelve or thirteen years old, some of us were given guns and made weekly excursions—no longer secret ones—after the robins, yellow hammers, and wild pigeons that during the fall migration congregated in the berry-bearing trees that were so abundant in the woods. At a somewhat later date the boys in autumn used to go up on the roof of our house and shoot at the wild pigeons passing over. Sometimes we killed several in a day, though there was much waste of ammunition.

With Jack Audubon, son of John Woodhouse, and the oldest grandson of the naturalist, I often in winter and spring went over to the Harlem River to lie in wait for muskrats on an arm of the river, which, if it existed today, would cover the old Polo Grounds—155–157th Streets and 8th Avenue—and run back about to the present 145th Street, west of 8th Avenue.

In those days wild ducks were often seen in spring and fall along the lower Hudson. Usually they were out of the reach of small boys, though I remember that Jack Audubon killed a Blue-winged Teal on the Hudson in the early 60's. Nevertheless, when we made excursions up to Dyckman's Flats we occasionally killed in the marshes there and along the Harlem River, a wood duck, teal or black duck, but such great game was most unusual. Almost always at the proper season of the year there were many small shore birds on the Dyckman marshes, which the little boys hunted faithfully. English Snipe were often started there, but I do not know that any of us ever killed one. Sometimes we went as far as "Bronson's"—now Van Cortland Park—where quail were started and an osprey had its nest in a tall tree that no one could climb.

I saw John Woodhouse Audubon almost daily, for as a playmate of his sons I was always in and out of his house, and besides, he was a close friend of my father, and often in the evening came to our house. He was a most kindly man, but sometimes spoke quickly and I was a little afraid of him. If he felt like coming up to our house in the evening he came out of his door and stood before his house, a hundred yards distant from ours, and shouted my father's name, and when answered called out, "If you have nothing to do, I'll come up and play you a game of billiards." A little later he appeared, hatless and without overcoat, often powdered with snow if it was storming, and shod with old-fashioned carpet slippers from which he stamped the snow as he opened the front door.

Often John Audubon painted in the barn, and the boys stood at a little distance and in silence watched him as the subject grew under his brush. He had a beautiful mare, Donna, of which he was very fond, that he painted.

Often he received natural history specimens from a distance and we boys gathered about him and with breathless interest waited to see what wonderful things he would draw forth from his boxes. I recall especially a great white arctic hare that he held up for us to see, which to my wondering eyes seemed longer than I was tall. With the hare were some dark colored birds, which must have been Spruce Grouse, and some white Ptarmigan—strange creatures from the North.

The picture of the eagle and the lamb always possessed a fascination for me. I greatly admired it and often talked about it to Grandma Audubon, and on one occasion she told me that after her death the picture should be mine. Boylike, I treasured this memory, but the promise was not again referred to. However, on the day that Madam Audubon departed for Louisville, September 18, 1873, I received from her a note, perhaps one of the last she ever penned, which said that in case of accident to her on her journey south I should take possession of the eagle and the lamb, and that if she and her granddaughter safely reached their destination the picture would be in her will for me. It now hangs in my house.

I never again saw Grandma Audubon, for in 1874 she died—full of years. She was a great woman and as good as great. The

help she gave to the people about her who needed it—rich as well as poor—will be remembered as long as those who knew her shall live. Some tributes to her greatness have been printed—but no words, written or spoken, can ever tell of all the good she did.

238 E. Fifteenth St., New York, N. Y.

COURTSHIP IN BIRDS.

BY CHARLES W. TOWNSEND, M. D.

THE difference between the mentality of birds and of man is enormous and we must be on our guard against imputing purely human motive to the lower animals. On the other hand the difference between man and the lower animals in many important matters is not one of kind, but one merely of degree.

A gull will drag a dried fish from the upper beach to the water to soften it before eating, a grackle will dip a tough bit of biscuit in the water for the same purpose, and a man will soften a hard crust in his coffee. How much is sub-conscious instinct or reflex action in some or all of these cases and how much is self-conscious reasoning and forethought—it is not my purpose to discuss here. To call it instinct in all cases in the lower animals and reason in all cases in man may possibly savor of conceit.

The desire to live, to obtain food and to mate are primitive inborn instincts common to both the lower animals and to man. To gratify these instincts similar actions are resorted to by both the lower animals and man. The actions of a child desiring food from a table and those of a dog under the same circumstances are very much alike. Each appeals by voice and actions for the food, each is anxious to please the owner of the food, and each—unless the point has been reached in its experience of life when it fears the consequences of unlawful acts—will avail itself of an opportunity to surreptitiously snatch the food.

In the same way the desire of the male bird to please the female more than its rivals please the same bird appeals to us as a very

reasonable and very human point of view. This is what leads to courtship, and in this courtship rivalry it is natural to suppose that the best bird wins. Although it has been somewhat the fashion of late to decry Darwin's theory of sexual selection and to substitute others for it, its simplicity and common sense still appeal to many, and it is worth while occasionally to consult the original text.

Darwin published his 'Origin of Species' in 1859. In Chapter IV he says he is led "to say a few words on what I have called Sexual Selection. This form of selection depends, not on a struggle for existence in relation to other organic beings or to external conditions, but on a struggle between the individuals of one sex, generally the males, for the possession of the other sex. The result is not death to the unsuccessful competitor, but few or no offspring. Sexual selection is, therefore, less rigorous than natural selection. Generally, the most vigorous males, those which are best fitted for their places in nature, will leave most progeny. But in many cases, victory depends not so much on general vigor, as on having special weapons confined to the male sex. A hornless stag or spurless cock would have a poor chance of leaving numerous offspring.

"Amongst birds, the contest is often of a more peaceful character. All those who have attended to the subject, believe that there is the severest rivalry between the males of many species to attract, by singing, the females. The rock-thrush of Guiana, birds of paradise, and some others, congregate; and successive males display with the most elaborate care, and show off in the best manner their gorgeous plumage; they likewise perform strange antics before the females, which, standing by as spectators, at last choose the most attractive partner.

"I cannot here enter on the necessary details; but if man can in a short time give beauty and an elegant carriage to his bantams, according to his standard of beauty, I can see no good reason to doubt that female birds, by selecting, during thousands of generations, the most melodious or beautiful males, according to their standard of beauty, might produce a marked effect."

Eliot Howard,¹ on the other hand, believes that display and extravagant bodily antics are merely "reflex actions directly re-

¹The British Warblers.

sulting from any excessive excitement, that they are not confined solely to courtship and do not in any way influence the female." The fact that the brilliantly arrayed male Argus Pheasant and the dull-colored Savin's Warbler both spread out and raise their wings and tails during courtship seem to Howard a strong argument against sexual selection.

Pycraft¹ says, "In these pages it is contended that neither brilliant coloration nor any other form of ornamentation is to be ascribed to the direct action of 'sexual selection.' That is to say such conspicuous features have not been dependent on the action of formal choice for their survival and development, but are rather the 'expression points' of the internal, inherent growth variations, which, not being inimical to the welfare of the species, have been free to pursue their development in any direction which apparent chance may dictate." In another place he says: "The frills and furbelows"—crests, vivid hues, etc., can—"be traced to the stimulating action of the 'hormones' which control both pigmentation and structure, as is shown by the fact that both are modified by any interference with the glands in question. Such ornamental features then are the concomitants, not the results, of sexual selection," and again "sexual selection, other things being equal, operates by according the greatest number of descendants to the most amorous and not necessarily to those of the highest hues." He is therefore willing to admit that amorous behavior by song and dance and display of plumage influence and attract the female but he objects to the bold statement that she selects the male. Such mental qualifications satisfy those who would cast aside Darwin's theory of sexual selection, but after all is said this theory, if not taken too literally, explains the facts better than any other. It is not necessary to assume that the female critically examines the display of color, dance or song of the rivals and balances them in her mind, but if we admit, as Pycraft is willing to do, that she is attracted and influenced by these, even if only in a reflex or sub-conscious way, we have practically admitted the truth of Darwin's theory. The fittest male in any or all of these respects will be more likely to perpetuate the race.

¹ Courtship of Animals.

The motives of display of color, dance and song are easily understood, for in one form or another they have all been used in human courtship. The likenesses are fundamental and extend from the lowest to the highest in the human species, but are most strikingly seen in the lowest, more primitive races.

Although at the present day and among the highest developed human races the display of bright colors is more marked among the females than the males, it must be remembered that this is a recent development. Only a few generations back the males, instead of wearing black or sombre clothing, were as brilliantly apparelled as the females, and among savages it is the male that is strikingly bedecked with feathers, tattoo markings and paint, while the female is quiet enough in her apparel or lack of apparel. The tendency of the highly civilized male to revert to brilliant display of clothing is shown in his fondness for military finery and for striking colors when he is freed from the restraining hand of convention, as witness the cow-boy and the sportsman.

In both bird and man the display of bright colors and attractive patterns, the dance and the song, even if of courtship origin and competitive in character, may lose the conscious sexual side and be continued at other times for mere pleasure, in other words the original incentive for display, song and dance may be entirely lost, but that does not seem to me to be any argument against the theory of sexual selection.

The explanation of the brilliant colors of male birds on a mere physico-chemical basis due to exuberance of vitality, the maleness of the males, or the stimulation of the hormones in the courtship season fails to account for the fact that the brilliance of display in this season may occur without the growth of new feathers, but merely by the wearing down of old feathers and the unveiling of concealed patterns. This is true in the case of the Snow Bunting, the Junco and the Chewink, and is strikingly shown in the case of the English Sparrow, where the process goes on all unnoticed at our feet.

The ultra-concealing-colorationists say that the brilliant colors serve to conceal, but one who has watched Eiders in the north, even though he admits that the green and white and black may match the iceberg and the sea and the rocks, is as sure that the

colors are for display and for conspicuousness as he is that black is black and white is white. The speed with which the male discards his brilliant dress when the spring madness is over seems to bear him out in this opinion.

A recent writer¹ in 'The Auk' states his opinion, that the brilliant colors and markings of the group of warblers "act as a uniform, facilitating the recognition by a bird of its own kind just as they facilitate its recognition by a bird student." How then does he account for the fact that the females and young, who need most to be identified, are most obscurely marked, and who can doubt that birds can not only identify their own species with ease no matter how poorly marked, but can pick out even their own offspring from others? Does a Chinese woman have any difficulty in recognizing her own offspring in a group of hundreds, all similarly dressed and looking alike as peas to our untrained eyes? Or, to bring the matter nearer home, watch a mother enter a school-yard in which a hundred small children all of the same age and dress are playing. She picks out her own child, brushes its dress and wipes its nose with a perfect certainty of conviction as to its identification, but if asked for the field marks, is unable to give them.

That the brilliant colors and markings of birds are of use in courtship and that many of them are the slow result of sexual selection seems to me to be a reasonable supposition because the male bird in courtship always displays these colors and markings to the best advantage. Where two or more males, as is often the case, are eagerly doing their best in display it would seem natural that the one who makes the most display is more likely to excite and win the female. If this were not the case the display would fall into innocuous desuetude. Mr. William Brewster once told me the interesting case of a pair of Summer Tanagers in the south where he shot the male. In a short time the female appeared with another male. This one also he shot and so on until he had obtained three or four of this female's spouses. On careful examination of plumage it was seen that the most brilliant plumage was possessed by number one and that the brilliancy decreased successively in the others.

¹ J. T. Nichols. *Auk*, 1912, XXXVI, P. 228.

The fact that the brilliant plumage is assumed in many birds for the nuptial season only seems to bear out the importance of display for courtship. The ducks go into the eclipse plumage immediately after the courtship season. The brilliantly marked male Wood Duck and the Eider alike assume the modest and quiet dress of the female. This is true of many other birds. The Bobolink and the Scarlet Tanager, the Goldfinch and the Myrtle Warbler doff their striking dress in the fall and appear in the modest apparel of the female and immature.

Courtship means the act of wooing in love. Whatever theory we accept we must admit that the male *appears* to endeavor to attract the female in one or all of three ways: first by a *display* of bright or striking colors, secondly by postures or movements which accentuate this display or call attention to his agility or skill—in other words by the *dance* in its broadest sense—and thirdly by sounds either vocal or instrumental—*song* in its broadest sense.

The classical courtship of the Peacock illustrates in an extreme form the display of color. It also includes the two other factors of dance and song. It may well be sketched here as an exaggerated form and epitome of our subject.

In the presence of the hen and when in an amorous mood the Peacock erects the stiff tail feathers which support the marvelous plumes that arise from the back and form the upper tail coverts. He walks with mincing steps, turning this way and then that, so that his beauty may be seen from all points by the hen who walks carelessly by. Seen from in front, his blue-green head and neck with black and white face markings and tufted plumes stand out like a Chinese jade carving in the center of a concave sea-shell of shimmering green, embossed at regular intervals with eyes of marvelous beauty and detail. From behind, the stiff gray tail feathers supporting the shell are seen to be set off below by an abundance of black and white down. The wings of brown and blue frame the sides. Suddenly the Peacock turns and flashes the full radiance of his beauty directly at the hen, he vibrates his downward stretched wings and quivers his stiff tail feathers so that they give forth a sound of rattling reeds. The green disk is thereby set all of a tremble in time with this instrumental music,

the great bird bows towards the object of his affection, emits a raucous cry, and the green, quivering sea shell curves beseechingly towards her. Who can resist such fascination?

But all birds are not so well fitted for display as the Peacock who appears to have reached the very acme in this direction, but a study of some of the less brilliant birds bears out, perhaps more clearly, the efforts of the male in display. The male Red-winged Blackbird, when engaged in feeding on the ground, appears as a simple black bird. Sometimes not a trace of color is visible, although he may show a narrow yellow line or a somewhat broader line with red in it on his shoulders. When engaged in courtship these same shoulders blaze with scarlet color. Not only are the surrounding black feathers pushed back so that the epaulets are broad and conspicuous, but each individual scarlet feather is erected and the epaulets are thick and striking. Not only that, but he flies slowly and directly towards the female and the beauty spots are displayed to her eyes, if she will but bestow a glance at them, under the most favorable and dazzling circumstances.

The male Eider swimming about and bowing to the female suddenly rises up on his tail in the water and flashes out the magnificent jet black shield on his belly, a color that ought not to be there according to the concealing colorationists. In the same way the Merganser drake displays his splendid white shirt front with its delicate tinge of salmon pink.

The male Bittern, as he strides about, extends the fluffy white feathers from under the wings in striking display. The male Blue-headed Vireo puffs out the yellow flank feathers till he seems nearly double the size of the slender female, and the Myrtle Warbler droops his wings to display his yellow rump and puffs out the yellow and black feathers on his sides.

The Black Guillemot as he courtesies to the female in the water opens wide his mouth and displays for her admiration the scarlet lining. The display of the inflated orange-colored neck-sacks of the Heath Hen is but a small part of the remarkable courtship display of this bird.

The Black Duck and the Domestic Pigeon in the ardor of courtship take short flights by the females and the white lining of their wings become momentarily in evidence. The Golden-eye drake

displays from time to time his brilliant orange-yellow tarsi and feet above the water as he performs his song and dance before the modest duck. Incidentally, and perhaps accidentally at first, he increases the display by the spurt of water caused by the movement of the foot. In the Merganser this spurt of water has evidently become of primary importance and is a most conspicuous feature, but it is plain that it arose from an endeavor to display a colored foot. From a display of color it has become a form of a dance with an added mechanical feature. All three factors of courtship are so intricately mingled that it is not always possible to treat of a single one alone.

Secondly the dance, using the word in the broadest sense, is frequently employed in avian courtship. In the simplest form the bird spreads its tail, slightly opens its wings and puffs out its feathers. This may be done rhythmically, and, with each motion, the song is emitted, for song and dance are almost always associated. The Bronzed Grackle illustrates this simple dance and at the same time very simple song. In slightly more elaborate form the bird may also bob its head and with still more elaboration swing or sway its whole body or jump up and down. The Blue-headed Vireo, for example, bobs and bows in addition to puffing out its yellow flanks, the Cowbird, besides puffing and spreading, bobs its head and swings its whole body, the Bluebird in the excitement of courtship jumps up and down on its perch and the Flicker bobs and courtesies in true cake-walk fashion.

That the dance does not necessarily mean leg movements is exemplified not only by birds but by various primitive human races where posturing and movements of the head, arms and trunk may constitute a large part of the performance. Among the ducks the movements of the head and neck are sometimes very striking and bizarre. The Golden-eye, besides performing with its feet in the way already described, has a remarkable head and neck dance and posturing in the courtship. The drake extends its head and neck straight forward like a bowsprit, then vertically upwards, then backwards so that the occiput rests on the rump, and lastly forward to the normal position. Black Ducks, Baldpates, Buffle-heads and others make short springs and flights from the water; Mallards, Scaups and Pintails bob

or bow and Red-breasted Mergansers courtesy with a swinging dip of the whole body. Bowing and courtesying are as common in avian as in human courtship.

Among our birds the Gannet has perhaps the most elaborate dance, one that in completeness and in many of its features suggests the dance of the Laysan Albatross so well described by Prof. W. K. Fisher.¹ It is worth while describing this dance of the Gannets in detail, for, as far as I can discover, there is no description of it in any American ornithology and I have found no mention of it in the pages of the 'Nuttall Bulletin' or 'The Auk.' Mr. P. A. Taverner² is the only one in this country who has referred to this dance as far as I know, and his description is very brief and omits many of the most interesting details. He calls it "a sort of conventionalized ritual." A fuller description is given by Mr. J. H. Gurney³ in his monograph on the Gannet. He says: "This sort of thing can be seen, with variations, any fine day in July, on the Bass Rock, but it cannot be the affection of courtship, because the courting season is passed." He ascribes it to the affection of the Gannets for each other.

The bowing and posturing and other strange antics of the Laysan Albatross is spoken of by Prof. Fisher as "a curious dance, or perhaps more appropriately a cake-walk," and he goes on to say: "This game or whatever one may wish to call it very likely originated in past time during the courting season, but it certainly has long since lost any such significance. I believe the birds now practise these antics for the pure fun they derive." These remarks I believe apply exactly to the dance of the Gannets. I spent many hours this last summer under most favorable conditions near the great Gannet nesting ledges on the Cliffs of Bonaventure Island, P. Q., and I saw the dance repeated by hundreds of pairs many times and I came to the conclusion that Prof. Fisher did in the case of the Laysan Albatross, namely that it was originally a courtship dance and that it was continued from habit and from the joy of it, in the same way that the Song Sparrow continues to sing long after the nuptial season.

¹ Auk, XXI, 1904, pp. 8-20.

² The Gannets of Bonaventure Island, Ottawa Naturalist, XXXII, 1918, p. 24.

³ The Gannet, p. 377.

Let me describe a typical performance: As the sexes are alike in plumage they cannot be distinguished apart. One of them, we will assume it is the male, is swinging around in great circles on rigidly outstretched and motionless wings. He passes within a few yards of me and swings towards a shelf crowded with birds brooding their downy, black-faced young. Alighting on the edge he elbows his way along the ledge, notwithstanding the angry looks, the black mouths suddenly opened and the vicious pecks of his neighbors. All of these he returns in kind. Arrived at his nest he is enthusiastically greeted by his mate, who, disregarding the young bird beneath her, rises up to do her part in the dance. The birds stand face to face, the wings slightly raised and opened, the tails elevated and spread. They bow towards each other, then raise their heads and wave their bills as if they were whetting these powerful instruments, or as if they were performing the polite preliminaries of a fencing bout. From time to time this process is interrupted as they bow to each other, and appear to caress each other as each dips its pale blue bill and cream-colored head first to one side and then to the other of its mate's snowy breast. With unabated enthusiasm and ardor the various actions of this curious and loving dance are repeated again and again and often continue for several minutes. After the dance the pair preen themselves and each other, or the one first at the nest flies away and the new arrival waddles around so as to get back of the nestling, and the strange process of feeding takes place.

This dance is not only performed by pairs as just described, but not infrequently individuals perform a *pas seul*, it may be because he or she is wearied with waiting for its mate. The wings are slightly raised and opened, the tail elevated and spread, the bill pointed vertically upwards and waved aloft, then dipped to one side under the half open wing and then to the other, the bill raised and waved again and so on over and over again. Owing to the great volume of sound from the ledges it is impossible to distinguish any individual performer, and I was unable to tell at what point in the dance and to what extent the song was important. The sound is like that of a thousand rattling looms in a great factory, a rough, vibrating, pulsing sound—*car-ra, car-ra, car-ra*.

The movements in the air that may or may not be accompanied with song may be classed in this division of the dance. The Bobolink, rising in irregular circles, or progressing in a horizontal plane on rapidly vibrated down-curved wings, is expressing his amorous feelings by dance as well as by song. His flight often concludes by a rapid descent with wings pointing obliquely upward, forming a display by posture and motion—in themselves forms a dance. The ardor of courtship bears many a bird aloft, and he expresses his feelings with his wings as well as with his voice. One may name not only the Oven-bird and the Maryland Yellow-throat, the Bobolink and the Orchard Oriole, the Semipalmated Sandpiper and the Upland Plover, the Horned Lark and the Pipit, but many other birds in this category, some of which, like the Song Sparrow, sing chiefly from a perch. The Horned Lark mounts silently to a great height and pours forth his song in long periods, sometimes out of sight in the low-lying clouds. The Pipit sings as he ascends nearly vertically and, arrived at the summit of his ambitions, descends quickly, still singing, to the earth.

All birds who indulge in flight song are apt to quiver their wings rapidly in their ecstasy. Sometimes this motion of wings becomes of primary importance and the bird flies with quivering wings but voiceless, or even vibrates his wings rapidly from a perch. This sometimes happens in birds that ordinarily sing at the same time. I have seen it, for example, in the Song Sparrow. The Pheasant quivers his wings rapidly but nearly noiselessly, then emits his vocal crow to be followed by a loud clapping of the wings. The Ptarmigan vibrates his wings rapidly in flight and calls at the same time; the Spruce Partridge flies from a tree stub to the ground with audibly vibrating wings, while the Ruffed Grouse stands on a log and, by the rapid whirring of his wings, emits his characteristic 'drumming.' That this drumming is evolved from a flight song and that there was once a vocal part of the performance, I have little doubt. These examples show the stages in the evolution.

The loud clapping together of the wings behind the back in Domestic Pigeons during flight and their habit of soaring with wings obliquely upwards, although common at all times, are

most marked in the courtship season and are probably of courtship origin. The V-shaped pose of the tail-feathers of the Bronzed Grackle is probably of the same nature for it is discarded in mid-summer.

Both the Savannah and the Vesper Sparrow stand or walk on the ground and elevate and sometimes vibrate their wings rapidly above their backs. They also fly slowly a short distance above the ground with head and tail up and wings rapidly fluttering and deliver their song.

The rapid headlong plunges of the Nighthawk may be classed as a display of motion, a form of the dance. Incidentally, and perhaps accidentally at first, a loud booming sound is produced by the rush of air through the wing feathers. This instrumental music is now the important feature, although the dance is by no means a negligible one. The Raven turns a rolling-over somersault in the air, and the Marsh Hawk plunges from a great height, loops the loop or turns a sidewise somersault. The Chat with dangling legs dances crazily about in the air, and the Kingbird executes a series of zig-zag and erratic flights, emitting at the same time a harsh double scream. This is a true courtship flight song but it is neither graceful to our eyes or pleasing to our ears. The taste of the Kingbird in these matters appears to us to be poor.

The impossibility of treating in turn only one of the primary divisions—display, dance and song—is well shown by these examples. The case of the courtship of the Heath Hen is still more difficult for all three factors are inextricably mingled. I have already alluded to the display of the neck-sacks of this bird, orange in color and shape, a very striking and beautiful feature, but secondary or incidental to the production of 'song' to be described later. The erection of the neck-wings which ordinarily help cover the deflated neck-sacks, the spreading and erection of the tail, the vibration of the down-stretched wings, the pirouetting and turning of the body and the rapid stamping of the feet in this species are all forms of the dance.

Lastly, in this brief review and rough classification of the courtship actions of birds, the song is to be considered. By song I do not mean necessarily a melody or musical strain pleasing to human ears—although many of these produced by the higher species of

birds are extremely pleasing—but any sound which is customarily connected with courtship. Courtship song, as thus understood, may be either vocal or instrumental. The rattling of the stiff tail feathers of the Peacock and the rolling drum made by the wings of the Ruffed Grouse fall into the instrumental category. The rapid stamping of the feet by the Heath Hen produces a ratta-tat-tat like that made on a kettle drum. The tooting sound, similar to that made by blowing across the top of a bottle, produced by the neck-sacks of this same bird, should, I suppose, be classed as instrumental song. The sounds made by the clapping together behind the back of the wings of the Domestic Pigeon, of the clapping on the sides of the Pheasant are, of course, in the instrumental class.

The Woodcock in his wonderful courtship flight, as he ascends straight up in the dim light of early morning or late evening, gives forth loud sounds that cease whenever the bird sets his wings and momentarily soars—instrumental sounds made apparently by his wings. During the last part of the ascent and during the descent he gives forth sweeter vocal notes or whistles. Before he is again on the wing he emits at intervals loud vocal *peents*, preceded by faint gulping sounds accompanied by a puffing out of the body and slight raising of the wings.

The Wilson Snipe flies about in his ecstatic courtship when the light is so poor that it is difficult to observe his flight, and sounds arise—quavering or bleating in character—which are believed to be instrumental in their nature, due to the passage of the air through his stiff primary feathers. The loud booming or whirring sound made by the Nighthawk in his spectacular plunges has already been mentioned, an instrumental music of curious character.

The drumming of the Flicker on a hollow stub or on a roof or chimney-pot is clearly to be classed as instrumental music. I have heard this bird interrupt his spring song to drum and later continue with his vocal music.

The song of courtship produced by the vocal organs of the bird varies from the rasping, vibrating note of the Golden-eye or the *aa-ou* of the Eider, emitted at the height of the dance and display, the harsh scream of the Kingbird or the *tis-ik* of the

Henslow' Sparrow to the clear, plaintive, whistle of the White-throated Sparrow, and the serene, spiritual hymn of the Hermit Thrush. While the simpler, more primitive songs are given forth only during courtship excitement, it is evident that many, especially the more complicated and aesthetic ones, although at their best and sometimes elaborated or extended under courtship excitement, are often continued and repeated for the mere enjoyment of the performer in his own music. The autumnal recrudescence of the amatory instinct, often displayed in song, is well known.

The subject of bird song is one apart by itself, and I have alluded to it in this brief manner merely to round out the classification, made in the beginning of this paper, of *display*, *dance* and *song*—the important features of bird courtship.

98 Pinckney St., Boston, Mass.

OBSERVATIONS ON THE HABITS OF BIRDS AT LAKE BURFORD, NEW MEXICO.

BY ALEXANDER WETMORE.

(Concluded from p. 247.)

19. ***Botaurus lentiginosus*** (Montagu). AMERICAN BITTERN.—One was heard pumping in the rushes several times on the morning of May 29. Another was found at the first of the small lakes in the canyon below on June 11. It was pumping also so that it is possible the Bittern breeds here.

20. ***Ardea herodias*** Linnaeus. GREAT BLUE HERON.—Present during migration. Three were seen on May 29, and one on May 30 and June 3.

21. ***Egretta candidissima candidissima*** (Gmelin). SNOWY HERON. Found at Lake Burford during migration. One was seen at the crossing of the Brazos River below Park View, N. M., on May 23, and another was observed at Lake Burford that evening. Two were noted at the lake on May 26, and another was seen on the morning of June 5. One flew past the cabin several times on the evening of that day and finally alighted in the rushes nearby where it was collected. It was an adult

female in full plumage, with the ova showing some development. It seems probable that these birds were on their way to the mouth of Bear River at the northern end of Great Salt Lake, Utah, as that is the only interior breeding colony in the region. These late migrants would reach there in time to form the breeding units that came in to the colonies as late as the middle of June.

22. **Nycticorax nycticorax naevius** (Boddaert). BLACK-CROWNED NIGHT HERON.—Fifteen pairs of these Herons were found at Lake Burford and at the time of my departure were preparing to breed in the rushes at the upper end of the Laguna de la Puerta. It is possible that there may have been another colony established later at the main lake. A few were present when I first arrived at Lake Burford, but they did not become common until May 29. Birds were flushed from the rushes during my work along the lake shore or were seen occasionally, five or six together, enjoying the sun on open beaches. In evening they flew back and forth in front of the cabin to convenient points from which to watch for the water-dogs (*Ambystoma*) that with frogs formed the only food-supply available here. On one occasion while I was sitting in a blind in the rushes a Night Heron flew by and spying a dead Axolotl floating in the lake alighted on the water (where it was six feet deep) to seize the water-dog in its bill. After resting thus for a minute the bird rose easily from the surface and flew off with its prey. It was somewhat of a surprise to find the Night Herons acting as scavengers, but they kept the dead Axolotls well cleaned up until the last part of my stay, for though I saw many floating on the surface of the water, comparatively few were found at any time washed up along the shore.

The birds often were found during the day time watching for water-dogs in the shadow of rocky points. Until the first of June I thought that at times they were rather hard-pressed for food for, as the water was cold, the *Ambystoma* seemed still inactive, and dead ones had not appeared on the surface in any numbers.

Night Herons in second year plumage were seen at intervals.

23. **Rallus virginianus** Linnaeus. VIRGINIA RAIL.—One was heard calling on May 25 and one was flushed in a narrow band of tules on the lake shore on May 27. Others were heard calling on June 7, 10, 11 and 12, so that it is possible that one pair at least nested here.

24. **Fulica americana** Gmelin. AMERICAN COOT.—Next to the Eared Grebe and Yellow-headed Blackbird the Coot was the most abundant breeding species here and it was estimated that 150 pairs in all were nesting at the lake. Many were in pairs on the date of my arrival, but until June 5 small flocks of unmated birds remained feeding in the open bays or rested in little bands on open beaches. Toward the latter part of this period these flocks at short intervals presented a scene of great animation as the birds displayed and fought savagely with one another. A little later on the companies broke up entirely. Each male selected an

area of shoreline in the tules and remained near this constantly, guarding it jealously, taking frequent occasion to drive away ducks and Eared Grebes who might chance to trespass, and having many fights with neighboring males. In these encounters they drove at each other with heads extended on the water and the wing-tips elevated. When near they began striking viciously with their bills and then, lying back, struck heavily first with one large foot and then the other, a most effective means of fighting as their claws were long and sharp, and their leg muscles powerful. Each tried to guard against these blows by seizing the feet of his antagonist so that often the two held each other by means of their feet, while they thrust savagely with their bills. The females frequently took part in these squabbles also, so that sometimes three or four birds were engaged at one time, while neighboring males came rushing up also seeming minded to interfere. When they separated the males sometimes rested for several minutes with heads down on the water and wing-tips raised, eyeing each other like two game cocks.

Their mating actions were interesting. Males frequently rushed after females, paddling over the surface of the water with flapping wings, while the females made off in the same manner, ten feet or so ahead. Frequently the females made merely a pretense at escape, striking out with their feet and making a great splashing but traveling slowly, but if too closely pressed they dove leaving the males looking about for them on the surface. In the most common act of display the male came paddling out with head and neck prostrate on the water, wing tips raised high above the tail, and the tail spread and elevated so that the white markings on either side were very prominent. As he came near the female usually assumed the same attitude. When two or three feet away the male turned and presented the prominently marked tail to the female, swimming off slowly and then returning to repeat the performance. This action was seen constantly whenever coots were under observation. Paired birds often swam toward one another from a distance of several feet with heads extended on the water calling *kek kek kek kek*. As they met they assumed a more erect attitude and then as they brushed against one another and turned about they dabbled in the water with quick jerks of the open bill that threw drops of water from side to side. Frequently the female reached over and worked her bill gently through the feathers on the male's head and then lowered her head while he preened her feathers in return.

A nest foundation was found on May 29 and on June 3 one bird was observed resting in a completed nest. By June 7 nests were common and by June 12 nests newly begun or containing sets of eggs were to be found in every projecting point of tules. In building the female arranged the dead stems of the round-stalked *Scirpus occidentalis* to form a platform, bending them over and striking them repeatedly with her bill to make them stay in position, causing a peculiar knocking, hammering noise that at this season was to be heard in the rushes on all sides. Frequently

the first one or two eggs of a set were laid on a mere platform and the completed nest built up later, depending perhaps upon the need of the female for a place to deposit her eggs. A complete set of seven eggs with incubation begun was seen on June 7 and after this sets were common. The males seemed to take no part in nest building, but stood about in the rushes a few feet away. This guard continued as the eggs were laid and incubation began. When the females were on the nest it was amusing, as I approached slowly in the boat, to see the males stalk truculently down and slide into the water, eyeing me closely all the while. Frequently at this season they rose on the surface of the water, treading heavily for a few strokes, making a loud turmoil in the water and driving themselves backward for a foot or more with the force of the effort, apparently a threatening act intended to frighten away an intruder.

Many of the nests were mere floating platforms anchored among the tule stems in two or three feet of water so that I was able to pass a boat paddle beneath them without meeting with any obstruction. Some were built in exposed situations where they were visible on all sides, so that the birds evidently have no fear of enemies approaching from the water. Incubating females frequently sat closely, allowing me to pass within a short distance, but took care to turn their heads so as to conceal the prominent white bill. One nest examined in an isolated clump of tules was composed entirely of green stems but this was unusual, as it was customary to utilize dried stalks only, even when it was necessary to carry them from a distance of several yards.

One bird was seen eating algae and slime that had collected on dead tule stems floating in the water. It fed eagerly on this material, seizing and stripping one piece after another.

25. ***Steganopus tricolor*** Vieillot. WILSON'S PHALAROPE.—This species was present here in migration. On May 24 about twenty, most of them males, were feeding on the open water in two small flocks. On May 27 a dozen were found on a mud bar in the upper end of Hayden's Lake. On June 8 two males and a female were found on one of the islands in the lower lake and it seemed as though they might be ready to breed here as the locality was a favorable one. They disappeared at once however, and, though a pair was seen in another locality on June 14, this Phalarope did not nest here this season.

26. ***Himantopus mexicanus*** (Müller). BLACK-NECKED STILT. Four were found in an open area on the north shore on May 30. They passed on at once.

27. ***Catoptrophorus semipalmatus inornatus*** (Brewster). WESTERN WILLET.—One was seen on May 27.

28. ***Actitis macularia*** (Linnaeus). SPOTTED SANDPIPER. The Spotted Sandpiper was found during the spring migration but none nested at Lake Burford, though they bred only ten or twelve miles away, along the Brazos River. Two were observed on May 24, while on the following day

there was a considerable influx of migrants so that about twenty-five were seen. The species was fairly common until May 28 and then decreased in numbers. Single birds were seen on June 1, 3 and 5. On June 18 an adult appeared, probably a bird come from the breeding grounds nearby, the forerunner of the summer migrants.

29. **Oxyechus vociferus** (Linnaeus). KILLDEER.—One pair of Killdeer nested on the western shore of Lake Burford and another pair bred at the Laguna de la Puerta.

30. **Meleagris gallopavo merriami** Nelson. MERRIAM'S TURKEY.—Old Turkey sign was seen in a gulch east of the lake on May 26 and the birds were reported as fairly common farther south.

31. **Zenaidura macroura marginella** (Woodhouse). WESTERN MOURNING DOVE.—The Western Mourning Dove was an abundant breeding species in the forested hills surrounding Lake Burford and often was seen along the rocky shores or in the sage brush. Pairs came down to water on the open beaches, or occasionally flew out and alighted upon floating masses of dead tules and walked down the edge to drink. Males were heard cooing and were seen in the short sailing flights, made with stiffly spread wings that are characteristic of the breeding season. In the early morning many came down on the floor of the open canyon below the lake and sometimes two or three hundred were gathered in a small space. They seemed to prefer the shaded side of the canyon, even though the mornings were crisp and cool. The birds were very nervous here, frequently flushing and flying for short distances perhaps through fear of predatory hawks. Later on in the day they rested in Pinyons or cedars or fed on the ground in the shadow of these trees.

One was found that had been killed by a Sharp-shinned Hawk.

32. **Cathartes aura septentrionalis** Wied. TURKEY VULTURE.—The Turkey Vulture was fairly common about Lake Burford and individuals often were seen soaring above the hills or about the broad sandstone ledges in the canyon below

On June 15 six pairs of these huge birds were seen walking about on a rocky beach where apparently they were looking for dead axolotls that often were washed up here by the waves. I drifted up in the boat until I was within thirty yards of one pair, and others showed little fear even when I landed and walked about. Two walked solemnly down to the water's edge and drank, dipping in the water and then raising the head (but not throwing the bill up) in order to swallow. They clambered over the piles of Potamogeton and algae cast up last year and left on the shore, pecking at it experimentally, pulling off the surface and digging into the interior with their bills as they would into carrion. One, suddenly feeling the warm sun extended its wings and spread its tail, remaining thus for several minutes. On the following day a pair came to search for bird bodies and other refuse at the cabin. It is probable that food was scarce at this time as bands of sheep that had been grazing here had all been moved

farther south into the mountains so that carrion from this source was no longer available.

33. **Circus hudsonius** (Linnaeus). MARSH HAWK.—On May 29, a female was observed high over the lake and one was seen four miles above El Vado on May 31. An adult female was noted at the lake again on June 14. Apparently this species did not nest here.

34. **Accipiter velox** (Wilson). SHARP-SHINNED HAWK.—This hawk nested in small numbers in the pine-grown hills around the lake. A male was seen playing in the air with a Cooper's Hawk on May 26. On May 27 one came darting through the sagebrush near the cabin and on June 2 one was seen in the gulch east of the lake. On the evening of June 6, attracted by an uproar among the Yellow-headed Blackbirds, I found a sharp-shin in the sagebrush just above the lake and shot it. This bird was a breeding female and had both right and left ovaries present and about equally developed, a common peculiarity among hawks of this group. The right ovary had produced two mature ova as was shown by the ruptured follicles and had another partly developed. The left ovary had already produced one egg and had another ovum greatly enlarged. The left oviduct only was developed.

35. **Accipiter cooperi** (Bonaparte). COOPER'S HAWK.—One was observed on a forested hill east of the lake on May 26.

36. **Buteo borealis calurus** Cassin. WESTERN RED-TAIL.—One or two pairs nested in the rocky hills bordering the canyon below the lake. Individuals were seen at short intervals from May 26 to June 14.

37. **Aquila chrysaetos** (Linnaeus). GOLDEN EAGLE.—Single birds were seen three miles above El Vado on May 31 and June 12, and on the latter date a pair of these eagles was observed near the Laguna de la Puerta. Apparently they nest in the rock ledges bordering the canyon below the lake. Limb bones of a Golden Eagle were picked up near the East Bay.

38. **Falco mexicanus** Schlegel. PRAIRIE FALCON.—A pair of these falcons had a nest containing young on an inaccessible ledge high up on the sandstone cliffs bordering the canyon below the lake. The adults frequently came across to hunt along the lake shore and harried the Yellow-headed Blackbirds so mercilessly that these set up an outcry whenever a bird of any size appeared on the skyline. Near the nest these falcons frequently perched in dead trees as well as on the rock ledges. The nest was easily located by watching and following the adults but was on a rock shelf where it could not be reached without ropes.

39. **Falco peregrinus anatum** Bonaparte. DUCK HAWK.—A pair of these swift-flying falcons had a nest in the canyon south of the lake and the adults were observed hunting at the lake and in the open country around it. The young left the nest about June 10 and were heard calling from rocky points nearby for a day or two afterward. One was shot from the boat on June 15 but was lost as it fell in a great expanse covered with sagebrush above a shale bluff.

40. **Falco sparverius phalaena** (Lesson). DESERT SPARROW-HAWK. The sparrowhawk was fairly common about Lake Burford and one or two were seen daily. One fed much of the time on a small flat below the cabin where it seemed to be catching the abundant grasshoppers. Often it perched on anthills or clumps of dead rushes in default of other resting places. On June 10 one was seen pursuing a magpie through a grove of cedars, striking at it repeatedly. These little falcons delight in playing with other hawks and were seen darting down at Redtails and Cooper's Hawks as they circled about in the air.

41. **Bubo virginianus occidentalis** Stone. WESTERN HORNED OWL. Horned Owls were fairly common in the timbered gulches above Lake Burford. On two occasions birds were heard hooting during the early forenoon and June 15 several were heard calling in the evening. On June 16 one was seen in a gulch east of the lake, and a large nest in the top of a Yellow Pine nearby may have belonged to this bird. That evening at dusk as I sat in the grove of Cottonwoods above the cabin a Great-horn came flying down from the hills above and alighted in the top of a tall dead tree over my head. It eyed me closely when I squeaked, but soon lost interest and continued looking around. Once it scratched the side of its head violently with one foot. After watching it a few minutes I shot it and found that it was a female bird of large size. The wing measured 405 millimeters, and the specimen appears to be typical of the form *B. v. occidentalis*.

42. **Dryobates villosus** (Linnaeus). HAIRY WOODPECKER.—Hairy Woodpeckers were fairly common and were nesting in the forested hills around Lake Burford. A male was seen drumming on a dead pine on June 2 and a female was found near the same place on June 9. One was observed in pines below the lake on June 11 and another came into the grove of cottonwoods above the spring on June 17. None were taken.

43. **Sphyrapicus thyroideus** (Cassin). WILLIAMSON'S SAPSUCKER. Fairly common among Yellow Pines on the hills above Lake Burford. On June 2 I found a pair of these birds east of the lake. The female was working steadily at a new row of drill holes in the bark of a Yellow Pine, where the area covered by old pits was already a foot square. This pair had a nesting hole driven in the trunk of a dead Yellow Pine about 50 feet from the ground, and the male remained on guard near it to prevent House Wrens and Violet-green Swallows that were busy about other cavities in the same tree from usurping it. He made little demonstration save to fly down to the hole and look in when one of the other birds came near it, but this was sufficient as they remained at a safe distance. After each inspection he sidled around on the other side of the trunk from me. The call note of this sapsucker is a low rattling *keh-h-h* given in a somewhat guttural tone. It resembles the call note of *S. varius* in a general way but is given in a stronger, more decided manner, and is louder. On June 16 a female in another location was working at a new row of pits in a large limb of a Yellow Pine.

44. **Colaptes cafer collaris** Vigors. RED-SHAFTED FLICKER. Flickers were fairly common in this area. One pair nested in a dead cottonwood near the spring hole above the cabin and others were breeding nearby. These birds spent much time in feeding on the ground in the sage brush. Ants were very abundant here so that food was easily secured.

45. **Chordeiles virginianus henryi** Cassin. WESTERN NIGHTHAWK. The first nighthawk, a female, arrived at Lake Burford on June 2. A male was heard calling and booming on June 6 and the birds were fairly common until June 16. On the following day there was a great increase in their numbers and evidently the bulk of the breeding birds arrived at this time. These birds frequented the rocky ridges covered with open forest above the lake, but came down over the flats to feed. On the evening of June 17 a number of pairs were seen and males were calling and booming excitedly. Locally it is believed that the male has a hole in either wing that he opens in producing the loud whirring boom, as he dashes down through the air.

46. **Aeronautes melanoleucus** (Baird). WHITE-THROATED SWIFT. The high cliffs of light-colored sandstone in the canyons near Lake Burford furnished suitable nesting sites for these swifts and the birds were fairly common about the ledges. From May 30 until June 4 flocks of them seemed to be in migration and were seen circling high in the air or feeding over the flats. Near the cabin they joined bands of Violet-green Swallows that were coursing back and forth above the sage brush, feeding on the swarms of chironomids driven in here by the wind. A few were collected here but it was difficult to pick them out from the innumerable swallows and shoot before they had darted away out of range. The call note of this bird is a shrill laughing *he he he he* heard usually when two or three are coursing along together.

47. **Selasphorus platycercus** (Swainson). BROAD-TAILED HUMMINGBIRD.—This hummingbird was fairly common about Lake Burford and was seen daily among the pines and pinyons or crossing the flats.

48. **Tyrannus vociferans** Swainson. CASSIN'S KINGBIRD.—This Kingbird was first observed on May 25 and from then on it was fairly common. They frequented rocky hillsides where scattered Yellow Pines rising above the low undergrowth made convenient perches from which to watch for insects and look out over the valleys. The birds nested here in small numbers and males were seen at intervals in crazy zigzag sky dances made to the accompaniment of harsh calls and odd notes, similar to those of none of our other birds. Toward dusk they called constantly their harsh, stirring notes making a pleasing sound that mingled with the songs of House and Rock Wrens, the scolding of an occasional Mockingbird and the cheerful calls of the Robins.

49. **Myiarchus cinerascens cinerascens** (Lawrence). ASH-THROATED FLYCATCHER.—One was found among cedars on a sage-covered hillside on the afternoon of May 26.

50. **Sayornis sayus** (Bonaparte). SAY'S PHOEBE.—Say's Phoebe was fairly common on the open flats below Lake Burford, and was heard calling plaintively in the evenings. Occasionally they were seen hovering over open flats in much the same manner as the Mountain Bluebird. The call note is a whistled *phée-ur*. A nest found on June 9 in a deep, narrow arroyo was placed on a narrow shelf three feet above the bottom, where the overhanging bank concealed it from view. This nest was composed of a few bits of weed stems and rootlets, bound together with spider webbing, and was felted firmly with a mass of sheep's wool gathered from the surrounding sagebrush. The interior was made almost entirely of wool, and was very soft and resilient. It contained four pure white eggs.

51. **Myiochanes richardsoni richardsoni** (Swainson). WESTERN WOOD PEWEE.—The Wood Pewee was fairly common among the Yellow Pines on the hills above Lake Burford.

52. **Empidonax wrighti** Baird. WRIGHT'S FLYCATCHER.—This small flycatcher was common among junipers and pines in the dry hills back of Lake Burford. It was first seen on May 25, but was probably present on my arrival. These birds were found over the dry hillsides above the gulches, perching near the ground, or, at times, mounting thirty or forty feet in the Yellow Pines. Sometimes they hopped restlessly from one perch to another, trying several in succession before being satisfied. The birds were often shy and difficult to approach. The ordinary call note was a loud *tsee-wick*, given almost as one syllable, that when heard near at hand was startlingly like the *chebec* of the Least flycatcher. At a distance however this resemblance was lost. The males had a peculiar jerky song divided into couplets with slight pauses between that may be represented by the syllables *see-wick*, *tsee-ee*, *se-wick*, *tsil-ly tsee-ee*.

53. **Pica pica hudsonia** (Sabine). MAGPIE.—One or two pairs of Magpies nested near the eastern shore of Lake Burford. The birds were seen almost daily and one or two old nests were observed.

54. **Cyanocitta stelleri diademata** (Bonaparte). LONG-CRESTED JAY.—This Jay was common among the Yellow Pines on the hills above Lake Burford. Well grown young out of the nest were observed on June 16.

55. **Perisoreus canadensis capitalis** Ridgway. ROCKY MOUNTAIN JAY.—One was seen on a high hill east of the lake on June 16.

56. **Corvus corax sinuatus** (Wagler). AMERICAN RAVEN.—Common around Lake Burford and nesting along the cliffs in the canyon below the lake. Ravens came over daily to feed along the lakeshore and in the sage-brush above it. On May 28 one alighted near the cabin and picked up and ate several white-footed mice that I had trapped in the cabin and thrown out near the door.

57. **Corvus brachyrhynchos hesperis** Ridgway. WESTERN CROW. Several pairs nested about the lake and came down daily to the shore.

Here they walked about in the open hunting for beetles, or flew along low over the rushes searching for the nests of blackbirds. The male Yellowheads and Redwings flew up and attacked them savagely but the crows paid them little attention.

58. **Cyanocephalus cyanocephalus** (Wied). PINYON JAY.—The Pinyon Jay was common among the Pines and Cedars on the hills around the lake. During May and the first part of June little parties of half a dozen or more were observed at intervals flying in the open or working through the pinyons. On June 14 a flock of about 100 appeared and fed among the sage-grown knolls until the time of my departure. On the ground these jays walked quickly, holding themselves upright with heads very high. This attitude, with the short tail and general build gave them a striking resemblance to Starlings though the neck appeared longer than in that species. When startled the whole flock flew off by easy stages through the cedars giving their pleasant, curiously modulated call notes. A considerable number of these birds were young of the year, and some of these, though well grown, were still being fed by their parents. In color these young birds appeared distinctly grayer, less blue, than the adults, and their call note was a persistent *quay-quay*, *quay-quay* that at once attracted attention.

59. **Molothrus ater** (Boddaert). COWBIRD.—The Cowbird was not observed at Lake Burford until May 30, when a female appeared near the cabin. On the following day a male was seen. This second bird took up his residence at the cabin and, becoming very tame, remained within a few yards of it constantly until my departure. When not feeding on the ground nearby he was usually to be found in the top of a low bush near the cabin door. The performance in singing was as follows: the bird would rest quietly for a few seconds, then expand the tail and draw the tip slightly forward, erect the feathers of the back and to a less extent those of breast and abdomen, and then sing *bub ko lum tsee*. In giving the first three notes he rose twice to the full extent of his legs and sank back quickly. After singing the bird relaxed and sat quietly for a short time. At noon on June 1, while watching this bird, I heard a low call like *tsee tsee*, to which the bird under observation responded. At once a second male came flying in, and, suddenly checking when two or three feet from the bush, extended the bill straight up and in this attitude came down slowly to a perch three feet from the first bird. This one at once assumed the same attitude, and the two remained thus for two or three minutes with bills pointing straight in the air, twisting their heads around but seeming never to look directly at one another. Finally first one and then the other lowered his bill and glanced at his neighbor but immediately stiffened up again in the erect attitude. The newcomer gradually relaxed, finally sinking down and fluffing out his feathers to remain almost asleep. The original male then began to sing, opening his wings wide and then closing them again in addition to his other motions, and at times nearly overbalancing in the violence of his display.

The original male was mated on June 2 and the pair of Cowbirds remained constantly nearby for ten days or more. On June 5 and 6 a second female appeared and fed with the others. The male was seen running at them with his bill pointing straight in the air and then pausing to sing and display. The second female disappeared at once while the pair remained together until June 13. After this the male was seen alone. He continued to sing during the remaining time that I was there but ceased displaying almost entirely. If observations made here are a proper criterion the breeding season for the Cowbird is very short.

60. **Xanthocephalus xanthocephalus** (Bonaparte). YELLOW-HEADED BLACKBIRD.—Next to the Eared Grebe the Yellow-headed Blackbird was the most abundant breeding bird at Lake Burford and the small lakes nearby. It was estimated that in all 210 pairs were nesting here. The adult males were settled in large part on their breeding grounds on my arrival, though many of them were not yet mated. Each selected a stand in the tules at the border of the lake, and, unless away feeding, was certain to be found in the immediate vicinity constantly from that time on. The birds were always tame but certain individuals whose domain I passed almost daily on foot or in a boat soon became fearless and I was able to recognize and look for these in certain spots constantly. At this season the male seems fully conscious of his handsome coloring and in his displays makes every effort to attract attention. In the most common display the male started towards the female from a distance of 30 or 40 feet with a loud rattling of his wings as a preliminary. The head was bent down, the feet lowered and the tail dropped while he flew slowly toward his mate. The wings were brought down with a slow swinging motion and were not closed at all so that the white markings on the coverts were fully displayed, the whole performance being reminiscent of a similar wing display of the Mocking-bird. In flying from one perch to another males often dangled their feet, frequently breaking through small clumps of dead tules with considerable racket. Or they clambered stiffly along, hobbling over masses of bent-over rushes, with heads bent down, tails drooping and back humped, appearing like veritable clowns.

The song of these Yellowheads was subject to much variation, but ordinarily resembled the syllables *Klee Klee Klee Ko-Kow-w-w*, the last low and much drawn out. Their colonies were always noisy, and strange cat-calls, drawn out wailing notes, and chattering protests came to my ears constantly from birds in the rushes below camp as I worked on notes or specimens. The ordinary call note of the males was a liquid *cluck*, somewhat unlike the call of any other blackbird, while the call of the female was more Redwing-like.

Some of the birds had nests on my arrival and by May 28 nest-building was going on everywhere. This task was performed entirely by the females who worked at it nervously and energetically, using wet or damp materials and molding them rapidly into shape. One brood of young had left the

nest, and another nest contained young from two to five days old, on June 14. Most of the birds, however, still had eggs at the time of my departure. The nests examined were all suspended in growing clumps of green tules (*Scirpus occidentalis*) over water from one to three feet deep, and were in danger of being overturned by the unequal rate of growth of the stems which frequently thrust one side of the nest high above the other. The adults seemed to take no steps to alter this condition beyond constructing their baskets with deep cup-shaped hollows to hold the eggs in if possible.

In feeding the Yellowheads gathered in little flocks containing both males and females, and flew back into the sagebrush where thousands of Chironomids blown in to shelter by the wind were gathered. The birds walked quickly along on the ground or clambered over the bushes, picking up the luckless insects and moving along quite rapidly. Sometimes these feeding flocks penetrated a mile or so inland but more often they were found near the lakeshore. Should a hawk appear, as frequently happened, males in the marsh below rose in the air with shrill chattering calls, giving the alarm to their feeding companions. These immediately rose and flew swiftly, low over the slopes, down to the shelter of the rushes. On calm still evenings when the gnats were emerging in numbers from the lake and were flying in toward land the Yellowheads remained in the rushes, and rising at short intervals captured the insects in the air as they passed. During the day flocks of the birds were continually passing up and down the slopes on their way to or from their feeding grounds.

The feet of the Yellow-head are relatively very large with long, strong toes and the birds use them to advantage in walking about on floating aquatic vegetation or soft mud. In the rushes they prove themselves expert gymnasts. Often they alighted near the tips of the tall round-stemmed tules and as these swayed under their weight the birds supported themselves by their wings while they slid their feet quickly down to a new hold, trying several grips until finally they were low enough so that the rush supported them. This was done with great quickness as the birds shifted from grip to grip rapidly. At times instead of sliding down they reached out and grasped a second stem with one foot, dividing their weight between the two and standing suspended with the feet five inches or so apart.

61. ***Agelaius phoeniceus neutralis*** Ridgway. SAN DIEGO REDWING. —The Redwing was abundant at Lake Burford and it was estimated that 20 pairs were nesting here, scattered along the shore of the lake among the abundant Yellowheads. A nest found near the cabin on June 14 contained four eggs. This nest was placed in a mass of dead tules of last year's growth where it had a secure foundation. Later it was robbed by crows. One male near the cabin in evening often slowly ran along the ground with wings partly spread and half-raised and epaulets showing to their fullest extent, a very pretty display.

62. ***Sturnella neglecta*** Audubon. WESTERN MEADOWLARK.—Meadowlarks were fairly common in open localities about the shores of the lake. On June 11 a nest containing four eggs and two newly-hatched young was found below the cabin at the edge of the marsh, placed in a last year's growth of Foxtail and Salt grass. As several bands of sheep had been trailed through here it was only by chance that this nest survived. Another young bird hatched on June 12 and a fourth one on the following day. The other two eggs may have been infertile as they had not hatched on June 19 when I left the region. The adult meadowlarks savagely attacked Redwings and Yellowheads that chanced to approach the nest site and permitted no intruders whatever.

63. ***Euphagus cyanocephalus*** (Wagler). BREWER'S BLACKBIRD.—A pair nested near a hayfield below the Laguna de la Puerta, where they were observed on May 31 and June 12 and 19. None were found nearer the large lake.

64. ***Carpodacus cassinii*** Baird. CASSIN'S FINCH.—A male was seen among Yellow Pines on a high hill east of Lake Burford on June 9. It was perched in the top of a very tall pine and was singing. The song in general was like that of the Purple Finch but was given more rapidly and emphatically.

65. ***Carpodacus mexicanus frontalis*** (Say). HOUSE FINCH.—A House Finch was observed near the eastern shore of Lake Burford on June 16.

66. ***Spinus pinus*** (Wilson). PINE SISKIN.—Pine Siskins were seen in the hills above the lake on May 26 and 28 and on June 16.

67. ***Poocetes gramineus confinis*** Baird. WESTERN VESPER SPARROW.—The Vesper Sparrow was common through the sage brush on the flats and knolls surrounding the lake and males sang constantly around the cabin. On June 6 a female flushed from a nest near the western shore of the lake, ran away along the ground through the bushes with her wings extended and held stiffly above her back. The nest was placed in a small hollow at the foot of a partly dead sage where the trunk arched out over it, protecting and partly concealing it, a needed shield from the trampling feet of sheep that were grazed here. The nest was a large, well-formed cup of dried grasses, lined with finer material of the same nature. It contained two young apparently five or six days old, partly covered with grayish white down.

68. ***Passerculus sandwichensis alaudinus*** Bonaparte. WESTERN SAVANNAH SPARROW.—Savannah Sparrows were found in small numbers in dead weatherbeaten growths of Bayonet Grass near the open shores on the northern and southern sides of the lake. Apparently they bred, as birds were noted here on May 28 and 30 and June 6, but no nests were found. On June 6 a male was singing.

69. ***Chondestes grammacus strigatus*** Swainson. WESTERN LARK SPARROW.—Fairly common in the country near El Vado. At Lake Burford one pair nested on an open flat above the grove of large cottonwoods.

70. **Zonotrichia leucophrys** (J. R. Forster). WHITE-CROWNED SPARROW.—These sparrows appeared in migration in the bushes near the lake on May 28 and remained until June 4. During this period they were fairly common in growths of *Amelanchier* and *Ribes* and were also found in the sagebrush.

71. **Spizella passerina arizonae** Coues. WESTERN CHIPPING SPARROW.—The Chipping Sparrow was fairly common in junipers near the lake shore and was found also among the pines covering the hills back from the lake.

72. **Spizella breweri** Cassin. BREWER'S SPARROW.—The Brewer's Sparrow was one of the most common breeding birds in the extensive sage grown areas surrounding the lake. The birds were seen constantly and males sang daily about the camp. A nest found June 4, placed in a fork in a sage 14 inches from the ground, was a small compact cup of grasses and weedstems, firmly woven externally, and lined with horsehair and bits of fine grass. The three eggs were clear pale green in color, spotted with brown. On June 12 a nest containing two newly hatched young was seen, and the following day another containing three eggs was found. A nest examined June 15 contained four eggs that were apparently fresh, two found June 16 contained two and three eggs respectively, and one seen June 17 contained 3 newly hatched young. All were similar in form and location to the one first described.

The birds themselves were quiet and unobtrusive merely flying up to lookout points on the tips of sage or hiding in the thick growth when disturbed. The song of the male with its shifting repetition of notes reminded me of a vocalist practising scales.

73. **Amphispiza nevadensis nevadensis** (Ridgway). SAGE SPARROW.—Locally distributed and breeding in the sage grown areas. A breeding female was taken May 30 and other sage sparrows were seen on June 4 and 6.

74. **Melospiza melodia montana** (Henshaw). MOUNTAIN SONG SPARROW.—The Song Sparrow in the main inhabited the fringing clumps and growths of dead tules (*Scirpus occidentalis*) remaining from last year, venturing up into the sage brush to feed, or occasionally to nest. In the dead tules the birds made a great rustling in creeping about so that I looked continually for larger birds, when I heard them. A nest found May 28 was placed on the ground in a slight hollow at the foot of a sage about 30 feet above the border of the rushes. It was a slight cup of grasses lined with hair from horses' tails and contained four eggs. I judged from their actions, however, that most of the birds were nesting in the more secure shelter of the tules. A female was seen carrying excrement from a nest on June 1, and June 4 young were heard calling. After this date young became common.

75. **Pipilo maculatus montanus** Swarth. MOUNTAIN TOWHEE.—This Towhee was common on the slopes and in the gulches above the lake,

seeming to prefer for cover, thickets of scrub oak and clumps of *Ribes* and *Amelanchier*. The birds were common on my arrival and males were singing, but they may be late in nesting as a mated female collected June 9 was not yet ready to lay.

76. **Oberholseria chlorura** (Audubon).^{*} GREEN-TAILED TOWHEE.—Fairly common on the sage grown slopes above the lake. Males were heard singing daily, and occasionally the birds were observed skulking about in the dense growth. A nest found on June 11 was placed in a sage about two feet from the ground. It was large and well-cupped in form and was composed externally of grass and weedstems while the lining was made of finer material. It contained three eggs whitish in color, well spotted with brown and lilac.

77. **Zamelodia melanocephala** (Swainson). BLACK-HEADED GROSBEEK.—This grosbeak was rather rare in occurrence about the lake. Males were observed on June 2 and 9 in a gulch in the hills.

78. **Piranga ludoviciana** (Wilson). WESTERN TANAGER.—This Tanager was fairly common among the Yellow Pines in the hills. The song resembled that of the Scarlet Tanager but was short, slightly more broken and somewhat less harsh in tone.

79. **Progne subis** (Linnaeus). PURPLE MARTIN.—Migrant birds were observed above the lake on June 8, 9 and 13.

80. **Petrochelidon lunifrons lunifrons** (Say). CLIFF SWALLOW.—One cliff Swallow was seen with a flock of Violet-green Swallows on May 25 and on the morning of May 26 a flock of 25 appeared. The birds were common from then on. Old nests were observed under the cliffs in several localities but the birds did not begin building this year until June 9. On June 11 they were building nests on the sandstone cliff above the Laguna de la Puerta. The birds came down to the lake shore in little bands of ten or a dozen and alighted close together with trembling wings extended at an angle from their backs, standing high on their legs to avoid soiling their feathers. After alighting they leaned over, filled the mouth with mud with one or two sharp digs and then rose to fly back up the steep slopes to the colony. Males frequently alighted on the backs of the females as they gathered mud and copulation took place while the birds were on the ground. Males as well as females took part in nest-building, as a male shot here had the mouth filled with mud held in a mass in the mouth cavity above the tongue.

81. **Hirundo erythrogastra** Boddaert. BARN SWALLOW.—A male came about the cabin at the lake on June 10, examining ledges under the eaves, and a pair was seen on June 14.

82. **Tachycineta thalassina lepida** Mearns. NORTHERN VIOLET-GREEN SWALLOW.—These swallows came in flocks about the cabin at the lake during May and swung tirelessly back and forth in the wind, barely skimming over the tops of the sage brush, in search of the many Chironomids that had taken refuge there. Often they came beating about me,

^{*}*Oreospiza chlorura* of the A. O. U. 'Check List.'

almost passing within reach, so that I heard the soft click of their bills as they seized their prey. On calmer days they circled high in the air or at intervals returned to sweep down over the sage. Occasionally in early morning I saw them resting in little flocks in the sun in the tops of still leafless cottonwoods. By June 2 the flocks of these swallows had retired to the hills where they were found about the limbs of dead yellow Pines inspecting woodpecker holes with much chattering and flying about. The birds then often hovered in the air with rapidly moving bills, the males seeming to endeavor to seize the females by the feet, or the feathers of the abdomen, while others circled about calling excitedly. Cold storms during the first week of June frequently brought them back in flocks to feed over the flats but when the sun came out again they disappeared once more in the hills. After June 7, though fairly common in the gulches above, comparatively few came down along the shore of the lake.

83. **Stelgidopteryx serripennis** (Audubon). ROUGH-WINGED SWALLOW.—Single individuals were observed on May 24 and 25, and a pair was found in an arroyo near the cabin on June 8.

84. **Vireosylva gilva swainsoni** (Baird). WESTERN WARBLING VIREO.—These Vireos were found in the thickets lining the gulches and among groves of aspens. They were not observed until June 2 but probably arrived two days or more earlier, as I found one pair on that date with a nest partly constructed in a chokecherry tree (*Padus melanocarpa*).

85. **Lanivireo solitarius plumbeus** (Coues). PLUMBEOUS VIREO.—The Plumbeous Vireo was common among the Yellow Pines in the hills above the lake on May 26, and was noted on all of my subsequent work in areas suited to it. On May 26, males were in full song, and one was observed carrying a bit of nesting material about with it and singing at the same time. The birds were found entirely in the Yellow Pines and often ranged in the tops of the tallest of these. They continued in full song until the middle of June and then became more silent. Some of the call notes given by this bird reminded me of the chattering calls of *Lanivireo flavifrons* while many notes introduced into the song were similar to some of the phrasing used by the White-eyed Vireo.

86. **Vermivora virginiae** (Baird). VIRGINIA'S WARBLER.—This warbler was common among the thickets of small oaks in the gulches and on the higher slopes around the lake, but was so secretive that it was difficult to observe. The males often sang from the tops of tall yellow pines, where they chose a hidden perch and remained motionless. When disturbed by some one moving about below they flew off for some distance, sometimes remaining in the pines and continuing to sing, or again pitching down into the undergrowth where they were hidden from sight. The song varied somewhat but usually could be identified without particular trouble. An incubating female was shot on June 16. The callnote of this species is a sharp emphatic chip, but though the birds scolded at me frequently it was seldom that they came out in sight to do so.

87. **Vermivora celata celata** (Say). ORANGE-CROWNED WARBLER.—This Warbler nested in small numbers in the gulches below the lake. Apparently it was a late migrant as it was not observed until June 2, when a female was collected in a grove of quaking aspens. On June 9 a male was encountered on an oak-grown hillside over which small Yellow Pines and Douglas Firs were distributed. This bird was rather inactive and often flew up into trees, usually conifers, to remain quiet and sing from some hidden perch. Once or twice while under observation it stopped to rest in the sun on a dead limb. The song, given constantly, was a rapid hurried trill, resembling the syllables *tsee-ee-ee-ee-er-er-er*.

88. **Dendroica aestiva** (Gmelin). YELLOW WARBLER.—This warbler apparently was found at the lake only as a migrant, though it nested along the Brazos River farther east. Single individuals were observed along the lake shore on May 23 and June 1 in willows and small cottonwoods. No specimens were taken.

89. **Dendroica auduboni auduboni** (J. K. Townsend). AUDUBON'S WARBLER.—This warbler nested in fair numbers in the Yellow Pine areas surrounding the lake. Males were found singing from the tops of the tallest Pines and were slow and leisurely in their movements in great contrast to their habit at other seasons. Frequently while singing they remained on one perch for some time so that often it was difficult to find them. The song resembled the syllables *tsil tsil tsil tsi tsi tsi tsi*. In a way it was similar to that of the Myrtle Warbler but was louder and more decided in its character.

90. **Dendroica graciae** Baird. GRACE'S WARBLER.—A small number of Grace's Warblers were encountered at the head of one of the gulches east of the lake, first on June 9, and again on June 16. Males only were observed. In actions and general appearance they reminded me strongly of *Dendroica dominica*. Usually they were found in the tops of the Yellow Pines where they worked about rather leisurely, exploring the smaller limbs and at short intervals pausing to sing. The song was a rapid repetition of notes somewhat reminiscent of the efforts of the Chipping Sparrow, but with the notes evenly spaced, not blurred at the end, and closing abruptly, so that the last syllable was as strongly accented as any of the others. It resembled the syllables *chip chip chip chip chip* given in a loud tone. Occasionally one was found working about through the oak undergrowth at times coming down almost to the ground. The flight was undulating and rather quick and jerky.

Grace's Warblers showed some curiosity toward me but in the thick brush it was difficult to follow them about. The callnote was a very faint *tsip* that carried only a few feet at best, and was so weak and soft that it was hard to locate the direction from which it came, so that birds that could not be found were heard often among the oaks.

91. **Seiurus noveboracensis notabilis** Ridgway. GRINNELL'S WATER THRUSH.—One of these birds was observed at the spring near the cottonwoods on May 23 and 25.

92. **Geothlypis trichas occidentalis** Brewster. WESTERN YELLOW-THROAT.—It was estimated that fifteen pairs of Yellowthroats were nesting around the lake. These birds were found in the tules, usually in that part of the growth that was standing in water adjacent to the shore. They sang constantly, but were so retiring that they seldom came under observation though it was usually possible to call them up into sight in the rushes by squeaking. Occasionally they gave the grasshopper-like trill that is sung so commonly by eastern birds.

93. **Wilsonia pusilla pileolata** (Pallas). PILEOLATED WARBLER.—A few of these birds occurred during migration. A female was shot on May 26 in oak scrub on a dry hillside and one was seen on June 2 near the spring at the cottonwoods. The specimen taken belongs to this form and all other notes are included here.

94. **Oreoscoptes montanus** (J. K. Townsend). SAGE THRASHER.—This Thrasher was observed first on May 29 after which it was fairly common in the areas covered with sagebrush about the lake. Males frequently sang from perches at the summits of the tall sage and the birds were observed occasionally in passing across the knolls and flats. At its beginning the song is somewhat like that of a grosbeak. As the notes wander on, to change and become more intricate, burring calls, that while harsh are not unmusical, creep in as an accompaniment to clearer whistled notes that are varied and pleasing. Low trills and changing combinations mark the song, reminding one of the improvisation of some gifted musician who, playing apparently at random, brings forth tones that follow one another in perfect harmony.

95. **Mimus polyglottos leucopterus** (Vigors). WESTERN MOCKINGBIRD.—The mockingbird was fairly common in the junipers on the flats and in the canyons near the lake. Males were heard singing frequently and one pair nested not far from the cabin.

96. **Salpinctes obsoletus obsoletus** (Say). ROCK WREN.—The Rock Wren was common around the lake and was seen frequently. Long slopes covered with fragments of broken sandstone were their favorite haunts.

97. **Catherpes mexicanus conspersus** Ridgway. CANYON WREN.—On June 2 I found a pair of these wrens about some sandstone ledges in a gulch east of the lake. The female was working busily carrying nesting material into a rock crevice, while the male remained nearby but made no effort to assist her. Once as the female passed him he ran out across the rock face with spread tail, and wings partly open and trailing, giving a low churring note. And at short intervals I heard his fine song ringing through the woods. The female ceased her labors once and sat for a few minutes in the warm sun to preen her feathers, finally resting for some time with eyes partly closed, apparently almost asleep.

On June 9 I examined the nest site and found the female on the completed nest, which however was empty. She remained on the nest until I had nearly touched her, though I had made considerable noise in climbing

along the rock face as I approached. The nest was placed on a small shelf of rock in the top of a shallow cave or hollow in a sandstone cliff. This ledge was about fifteen feet from the floor of the gulch, and the cave was approximately three feet high.

On June 16 this nest contained four eggs. The female darted from the nest as I came up to it and went on away without stopping to scold. The male was singing a short distance away but did not come near. The nest measured 8 inches across the base and 3 inches tall. The cup containing the eggs was $2\frac{1}{2}$ inches in diameter and 2 inches deep. The foundation was composed of a dozen or more small twigs upon which were placed moss and masses of spider webbing with bits of leaves, catkins and bud scales. The nest lining was composed of a heavy felting of sheep's wool, most of it white, though a few bits of dark brown wool were mixed through it. In addition, in the cavity containing the eggs, were a few feathers of Great Horned Owl, Violet-green Swallow and Cassin's Finch. The eggs were translucent white in color, dotted mainly about the large end with small spots of reddish brown.

98. *Troglodytes aedon parkmani* Audubon. WESTERN HOUSE WREN.—The House Wren was fairly common in the wooded areas on the hills above Lake Burford, and was nesting in Woodpecker holes and other cavities in trees.

99. *Telmatodytes palustris plesius* (Oberholser). TULE WREN.—On May 27 a Tule Wren in very worn plumage was seen creeping about in a stand of dead rushes, but no others were observed during the course of the work at the lake. The growths of tules seemed favorable for them in every way so that their absence was rather surprising.

100. *Sitta carolinensis nelsoni* Mearns. ROCKY MOUNTAIN NUTHATCH.—This Nuthatch was fairly common among the pines above the lake.

101. *Sitta pygmaea pygmaea* Vigors. PYGMY NUTHATCH.—The Pygmy Nuthatch was fairly common among the Yellow Pines and was breeding here as incubating females were taken on June 9 and 16. This was one of the few mountain birds that showed marked curiosity and responded readily to squeaking.

102. *Penthestes gambeli gambeli* (Ridgway). MOUNTAIN CHICKADEE.—Fairly common in the Yellow Pine forests about Lake Burford. On June 16 I found a nest of this species in a living quaking aspen in an old woodpecker hole located about five feet from the ground. The tree grew on a slope in a narrow gulch and the nest opening was well concealed in the brush so that I had some difficulty in finding it. Cutting into the nest I found that it contained five young nearly fledged. Later in another locality I saw a female carrying food to young.

103. *Planesticus migratorius propinquus* (Ridgway). WESTERN ROBIN.—The Western Robin nested commonly in the gulches around Lake Burford and one or two pairs were found in the grove of cottonwoods

near the spring. Two empty nests found on June 16 were placed in scrub oaks on sloping limbs about six feet from the ground.

104. *Sialia mexicana bairdi* Ridgway. WESTERN BLUEBIRD.—A few of these birds were found among the Yellow Pines on the hills above the lake. They were nesting here and were observed at frequent intervals.

105. *Sialia currucoides* (Bechstein). MOUNTAIN BLUEBIRD.—The Mountain Bluebird was common about Lake Burford, ranging from the lake shore to the tops of the hills. A nest found May 25 near the cabin was placed in a cleft between two forking limbs of a cedar four feet from the ground. A cavity about ten inches deep had rotted out here and the bluebirds had built in the bottom of it. Immediately beside the opening was a notice printed on muslin, posted by Biological Survey trappers to warn against the theft of wolf traps. The nest when found contained five eggs that hatched about June 3. It was interesting to note that young were found out of the nest among the pines on the hills on May 26, another instance of the fact that the season was farther advanced on the hills than it was in the valley below.

U. S. Biological Survey, Washington, D. C.

NOTES ON THE BREEDING HABITS OF THE RUSTY BLACKBIRD IN NORTHERN NEW ENGLAND.

BY FRED H. KENNARD.

Plates XIX-XX.

WHILE the Rusty Blackbird is a common spring and autumn migrant in New England, and is known to breed along our northern boundaries, but little seems to have been written about its nesting habits, except by Bendire, who has described them in some detail; while its eggs are comparatively rare in collections. Hence, in the spring of 1914, I fell a victim to the blandishments of Owen Durfee and agreed to join him in a hunt for their nests. I had noted Rusty Blackbirds several seasons before, while fishing for landlocked salmon in Essex County, away up in the north-east corner of Vermont, and thither we decided to journey.



1



2

NESTING SITES OF RUSTY BLACKBIRDS

1. On top of old stump. 2. In stranded Spruce bough.

As the limited space at my disposal will not allow of the telling of all the pleasures and disappointments of our quest through this and succeeding seasons, I shall try merely to give an account of the nests we discovered, with a brief description of the surroundings of each, and then tell collectively of the bird's habits as I observed them.

Carefully, as we thought, arranging the time of our hunt so as to find freshly laid sets of eggs, we were on the ground on May 30, and on the 31st succeeded on finding two nests, both with young birds.

One containing four young birds, two or three days old, was placed about six feet up, against the trunk of a small, thick-growing spruce, on the edge of a thicket of evergreens, growing in a swamp at the end of a small trout pond.

The other, containing three young birds one or two days old, and one addled egg, was placed about seven feet up, between the trunks of two spindling little balsams in an almost impenetrable clump of evergreens. This was beside a logging road, perhaps twenty-five yards back, on the bank of an inlet to a large lake.

As the season hereabouts had been late this year and the woods and swamps were, I am told, still deep in snow during the first week in May, these birds must have started their nest building before the snows disappeared.

In 1915 we were again in the field after the Essex County birds, and determined to be there on time. May 21 found us in camp, and we spent the morning in a fruitless hunt for the trout pond birds, which had apparently moved back into the swamp, and in the afternoon succeeded in finding two nests on the shore of the larger lake. The first contained four young birds, and was placed about eight feet up, between the tops of two thin little spruces in a thick clump of evergreens. This undoubtedly belonged to the same pair of birds whose nest we had discovered last year, and was only about fifty yards from their last year's location. These eggs must have been laid by May 5 and the nest started in April, sometime before the snow is ordinarily out of the woods in this region. While the month of May had been exceedingly cold, wet, and disagreeable, the weather during April had been warm and fine, and this perhaps may account for the unusually early nesting of the species this year.

Later in the day we discovered another nest, about a quarter of a mile away, containing five eggs, too hard set to save, placed about five feet above the ground, between the tops of two stocky little spruces, in a thick second growth of evergreens. This nest was on the bank, well above the level of the lake, and perhaps fifty yards from its shore.

Disappointed but not discouraged we continued our hunt for a week; and finally on May 27, located another nest over in Coos County, New Hampshire, with four young two to three days old. This nest was in a swamp at the end of a small pond, and was about six feet up in a small dead spruce standing out by itself.

The top of the tree had been broken, and bent over at an angle of about forty-five degrees, and here just below the break, in a tangle of dead branches and usnea moss, the nest was placed. About this time our enthusiasm began to ooze and we returned home, to resume the hunt in 1916.

May 19, 1916, found us again in Essex County, and this time we were rewarded by finding a nest and two fresh eggs. I took the set of four on the 22d, after visiting the nest twice daily. This probably belonged to the same pair whose nests we had found the two previous seasons, and located perhaps fifty feet from their last year's nest, was built about five and a half feet up, in a little spindling spruce, in an almost impenetrable thicket, close to the shore. The female was sitting on her eggs at each of my several visits, though she flew off silently upon my close approach.

I did not get over into New Hampshire this year, but on May 29, Durfee visited the location of the last year's nest, that we had found in the swamp, and again found young birds three to four days old. This nest was perhaps fifty feet from last year's, and was placed about six feet above the surface of the swamp against the trunk of a small spruce.

I was unable to do any collecting in 1917, but on May 16, 1918, was again in the field, this time with Mrs. Kennard, in Penobscot County, Maine, about seventy-five miles northeast of Bangor, where I had seen Rusties while on a fishing trip during a previous season. There is a trout brook there, that for the last hundred yards or so, flows through a swamp before joining the waters of a

small lake. Because of the shyness of the bird, and the fact that incubation had not yet begun, it was not until May 21, that we finally succeeded in locating the nest, with two fresh eggs, in a dead spruce top, that had floated down the stream in the spring floods, and become stranded near its mouth. It was only a foot above the surface of the water, in a tangle of usnea moss, and so well hidden that we had paddled by it in our canoe time after time without ever suspecting its presence. The nest was visited daily until the 24th when I took it with five eggs.

On June 5, I found the second nest of this pair, containing five eggs,—this time perhaps a hundred yards back in the swamp, about twenty feet up, in a tall, unhealthy looking spruce. It was placed in one of those thick bunches of evergreen twigs that sometimes grow close to the trunk of a spruce, and could not be seen from the ground. They had built this second nest and laid five eggs in exactly twelve days.

On June 16, I found their third nest, containing four eggs, this time it was built near the first nest, beside the brook, in a tangled growth of sweet gale overhanging a ditch, and about two feet above the water. They had finished this third nest and laid four eggs just eleven days after the taking of the second nest. I felt like a pirate in taking it, but wanted to find out how persistent these birds could be under continued adverse conditions.

I was called home at this time, but on July 14, returned to the woods, and found their fourth nest. This time they had built upon the opposite side of the brook, about ten feet back from the edge of the stream, in a thick growth of button-bushes. The nest was placed in a crotch, a couple of feet above the water, just as a Red-wing's would have been, and contained three young birds only a few hours old, and one egg which hatched the next morning. The young were watched daily till fledged. Allowing fourteen days for incubation, it appears that this industrious pair built their fourth nest and laid this last set of four eggs, in fourteen days, a remarkable and exceptional performance, as other pairs left at once when their nests were taken.

On June 10, I found another nest containing four eggs, in various stages of advanced incubation. This was placed about four feet up against the trunk of a comparatively isolated, thickly

branched small spruce, back on dry land about seventy-five yards from the shore of a large lake. The nest was normal in construction and position, but the eggs closely resembled, except in size, those of the Bronzed Grackle,—so much so, that had I not found the nest myself, and had a close view of the very distressed old birds, I should have had grave doubts as to their identity.

The spring of 1919, found me again in Penobscot County, where I succeeded in finding the following nests:

On May 19, I again discovered the nest of the trout brook birds, placed about five feet up, in a thin clump of slim spruces, close beside a logging road that leads through the swamp there. I took the eggs, evidently slightly incubated, supposing that they would build another nest, as they had done last year, and which I could watch from start to finish. My intentions, however, seem not to have been appreciated, for they promptly disappeared and were not seen there again during the summer, discouraged no doubt, and who could blame them.

On May 25, in Washington County, Maine, I took a nest with five perfectly fresh eggs, the first I had ever seen, as in all sets taken previously, incubation had apparently begun with the laying of the first egg. This nest was built about two feet up in a little, low black spruce, one of a clump on a floating island, in a swamp caused by raising the waters of the large lake on which it was situated.

A nest discovered on May 27, in Penobscot County, contained five recently hatched young. This nest, near the shore of a large stream, bordered by miles of dead wood, was placed about eight feet up, and absolutely hidden in a matted tangle of dead limbs and usnea moss, where a big spruce had fallen across a smaller one.

On June 5, also in Penobscot County, I found still another nest with four unincubated and slightly addled eggs, built about five feet and a half above the ground, in a small thick spruce, in a clump of evergreens a few feet from the shore of a large lake. This nest had evidently been deserted.

Arriving in southern New England usually in the latter part of March, or early in April, these birds loiter along on their leisurely migration, and arrive on their breeding ground along our



NEST AND EGGS OF RUSTY BLACKBIRD

northern borders late in April or early in May, about the time the ice goes out of the lakes and often before the snow is melted in the surrounding woods and swamps. Here they spread out through their accustomed haunts, along the shores of the secluded lakes and ponds, among the swamps, or along the brooks and streams, showing a particular fondness for the "dry-kye" or dead-wood among the back-waters. To these places they return season after season. Though gregarious throughout most of the year, I have never found more than one pair in a given area during their nesting season. There may be colonies of Bronzed Grackles and Red-wings breeding close by, but never more than one pair of Rusties. The nearest I have ever found them being a quarter of a mile apart.

C. J. Maynard in his 'Birds of Eastern North America' writes of some "perfectly inaccessible" "sloughs" in the Magdalen Islands, as follows: "I had observed Blackbirds about there on several occasions, but as they kept well in the centre of the large tracks, I could not make out at first what they were, but after a time found a large colony of Rusty Grackles were evidently building in one of the above described places." As Mr. Maynard seems to have been doubtful as to the identity of the birds in the first place, and later confesses that "all efforts to penetrate this fastness proved unavailing" this evidence as to these birds sometimes breeding in colonies seems hardly conclusive.

In northern Vermont and New Hampshire where the migration up the Connecticut valley seems to bring them early to their breeding grounds, they start their nest building early in May, while in eastern Maine, only a trifle farther north, they usually do not start until the middle of the month.

For sites they seem more apt to choose evergreens, preferably thick clumps of second growth spruce and balsam, though I have found them in dead trees or in clumps of deciduous bushes, button-bush and sweet gale, along the shores of some stream. Audubon writes of finding "their nest among the tall reeds of the Cattail or Typha." Samuels tells of nests along the Magalloway river in Maine, built in low alders overhanging the water, and Chapman records their having built upon the ground, though I can find no further record of their so doing.

My friend, William Lyman Underwood, tells me of a nest he found on June 19, 1900, in Penobscot County, Maine, built in the top of an old stump, standing in the water, out from the shore of a lake, and containing three eggs upon which the female was sitting. Owing to the difficulty of photographing the nest and eggs in situ, he had his guides saw off the stump, carry it across the lake, perhaps a quarter of a mile, to a beach where he could set it up and photograph it. They then brought the stump back, and replaced it securely upon its foundation; and the female returning, continued her parental duties and raised her young.

The nests in situ, are in the majority of cases difficult to photograph, because in the positions usually chosen, in thick clumps of low evergreens or bushes, the cutting necessary in order to set up one's camera and properly focus, would destroy the natural surroundings.

While, owing to their shyness, I have never been able to catch the birds at nest-building, I have examined a good many deserted nests besides those recorded above, and a careful examination of the nests in my collection shows their method.

In construction, those that I have seen, have all been particularly well built, rather bulky structures, and practically alike. A foundation is usually laid of usnea moss, sometimes in thick masses, and upon this they build their outside frame-work of twigs, usnea, lichens and occasionally a few dried grasses. In one of the nests in my collection the twigs used were mostly dead hackmetack, in another spruce, while in the remainder, twigs from deciduous trees predominated. This framework usually becomes thicker and more substantial as it progresses upward.

Within this outside frame they construct a well modeled hollow bowl, between five and one-half and six centimeters in depth, and between eight and one-half and nine and one-half centimeters inside diameter. This bowl, which seems to the casual observer to be made of mud, is in reality made of "duff," the rotting vegetable matter with which the ground of this region is covered, and which when dried becomes nearly as hard and stiff as papier mache; and shows their interesting adaptability to conditions, as real mud must at this season be hard to find. A cross-section of the nest shows the bowl to be of varying thickness, but averaging

between five and ten millimetres, and so pressed onto its surrounding frame as to become, when it hardens, a part of it.

After the bowl has been carefully modeled and smoothed off on the inside, it is lined with the fine, long green leaves of grasses that grow in the swamps thereabouts, and is finally topped off with dried grasses and fibres of various sorts, and a few thin, bendable twigs. In recently constructed nests I have found the green lining to be absolutely constant, although as incubation progresses, these grasses, of course, gradually turn brown. The diameter of the nest when finished, just across the outside of the bowl, averages about twelve centimetres, while the diameter of the entire structure, except for a few outreaching twigs, varies from fourteen to twenty centimetres. The usual measurements from foundation to top of bowl are from eight and one-half to nine centimetres.

Audubon in Vol. II of his 'Ornithological Biography,' writes that "The nest is not so large as that of the Redwing, but is composed of much the same materials. In Labrador I found it lined with moss instead of coarse grass. The eggs are four or five, of a light blue color, streaked or dashed with straggling lines of brown or deep black, much smaller than those of the Redwing, but in other respects bearing considerable resemblance to them."

Such nests as Audubon may have found, must, if they were Rusty Blackbirds', have been very exceptional, and the above information is certainly misleading. The female Rusty is considerably larger than the female Redwing, and builds a much larger and bulkier nest, and the eggs, four or five in number, are ovate in shape, larger, more fully rounded and less elongated than Redwing's, which they in no way resemble; and smaller than those of the Bronzed Grackle; the fifty-three in my collection averaging 25.57 millimetres x 18.56 millimetres.

Bendire describes them well as follows: "The ground color is a light bluish green, which fades somewhat with age, and is blotched and spotted more or less profusely, and generally about the larger end of the egg, with different shades of chocolate and chestnut brown and lighter shades of ecru, drab, and pearl-gray. The peculiar scrawls so often met with among the eggs of our Blackbirds are rarely seen on these eggs, which are readily dis-

tinguishable from those of the other species." As I have noted with other species, the last laid egg may be less heavily marked; particularly if the birds have been disturbed in previous settings. In the two last sets of the trout brook pair, the last laid eggs were grayer and without the glaze of the others. Apparently they run out of pigment towards the last.

The female usually starts incubation with the laying of the first egg, particularly in the early spring, when the weather is cold, and sits pretty close, flying off only upon one's near approach. Particularly shy birds may, when disturbed, disappear without uttering a note, but the great majority that I have observed will remain in the vicinity of the nest, uttering their loud "chips" of alarm, becoming more and more distressed, when disturbed, as incubation progresses, until after the hatching they are particularly vociferous. During incubation the male is very assiduous in his attentions to the female, feeding her frequently, and seldom flies far from the nesting locality. The female at this season is usually seldom in evidence, but by watching the male, one can soon determine by his actions the approximate locality of the nest. He has the very conspicuous habit of sitting on the top of some tall dead stub or tree, often with a nice fat grub in his bill and calling to the female. This call note is a two-syllabled "conk-ee," very similar to the three-syllabled "conk-a-ree" of the Redwing, but clearer and more musical, and usually distinguishable from the notes of the other blackbirds.

If disturbed by the proximity of watchers, he may delay for a while, uttering an occasional "chip" of alarm, but sooner or later he will fly close to the nest or to the top of some nearby stub, when the female will fly out to him, and with low "chucks" and much fluttering of wings, partake of the delicious morsel he has brought her. The knowledge of this habit, acquired during our second trip, greatly simplified our hunts during succeeding seasons.

It has so happened that I have never been able, from personal observation, to check up the exact time of incubation, but Bendire states it to be "about two weeks" and Dr. Bergtold states that it is "14 days."

The young, when hatched, are covered with a long, thin, fuscous natal down; and fed by both parents, at frequent intervals, de-

velop rapidly, as such young birds do. The nest is kept clean, and I saw the female frequently drop a white fecal sac in the nearby brook, as she flew away from feeding her charges. By the fifth day, the primary quills and other wing feathers are well under way, while the growths along the remaining feather tracts are starting; and slight slits begin to show between their eyelids. By the tenth day the young are well covered with feathers, through which some of their natal down still protrudes, and their eyes are nearly but not quite wide open.

A tragedy occurred to the only brood I was able to watch, for on the tenth day after hatching, one of the young was found in the water, about ten feet from the nest, dead and partially eaten. Whether he deliberately climbed from the nest, and later fell into the water, or was taken by some animal, will never be known, but the next day the three remaining young all climbed out into the adjoining bushes, it seemed to me, ahead of schedule time, for their eyes were hardly open, and they were still unable to fly.

They remained in the immediate vicinity of the nest for the next two days, climbing and hopping from bush to bush, with both parents in close attendance, till on the thirteenth day, they had learned the use of their wings; and in the evening the last one was seen to fly across the stream, followed by its mother, and to disappear in the swamp beyond.

The actions of the male, of this particular brood, were peculiar, for, after being very attentive to the female during incubation, he spent his days, as soon as the young had hatched, away from the locality, never helping the female in any way with her duties, except in the evenings, when returning with some other Rusties, that he had apparently been spending the day with somewhere, he would help feed the young, and spend the night in the vicinity.

As soon, however, as the young climbed out of the nest, he resumed his share of the parental duties throughout the day. Perhaps under normal conditions, he would have been taking care of the young of a first brood, while the female took care of a second.

Whether or not Rusty Blackbirds may occasionally raise a second brood, I am unable to say. I believe the Redwings do, for I have found their nests late in the season; and on July 20, 1918, in Washington County, Maine, I watched, for some time, a pair

of Rusties feeding fledglings. This was near a colony of Bronzed Grackles, and it is possible that their previous nests may have been disturbed, but it seems probable that this may have been a second brood.

About the middle of July, the Rusty families seem to desert their solitary breeding haunts, and again become gregarious, and are seen in small flocks, flying high overhead, between the lakes, or feeding along their shores, getting ready for their southern migration.

Dudley Road, Newton Centre, Mass.

THE GENERA OF CERYLINE KINGFISHERS

BY WALDRON DEWITT MILLER

In a note published in 'The Auk' (1918, p. 352) the writer advocated the union in one genus, *Megaceryle*, of all the large, conspicuously crested Ceryline Kingfishers. These had been divided by Mr. Ridgway (Birds N. and Mid. America, Pt. VI, 407) into *Megaceryle* and *Streptoceryle*. At that time I overlooked the fact that *Streptoceryle* might be inadmissible on nomenclatural as well as on zoological grounds.

I. NOMENCLATURE.

In my 'Revision of the Classification of the Kingfishers' (Bull. Amer. Mus. Nat. Hist., XXX, 1912, p. 265) the type of *Megaceryle* Kaup, 1848, was given as *M. maxima* by subsequent designation of Gray in 1855. The early history of the genus *Megaceryle* is briefly as follows:

Megaceryle new subgenus, Kaup, 1848. Contained four species, all of which are still referred to it when the genus is used in the broad sense.

"*Megaceryle* Kaup," Reichenbach, 1851. (Handb. Alced.)
The same species given by Kaup, (except that the Asiatic spec-

ies *M. guttata* was replaced in *Ceryle*) with three others, none of which is more than subspecifically distinct.

"*Megaceryle* Reich." Bonaparte, 1854. (Consp. Volucr. Anisod.) The same Old World species given by Kaup with the addition of *M. lugubris* (the Japanese representative of the continental Asiatic *M. guttata*, perhaps only subspecifically distinct). A new genus, *Streptoceryle*, was proposed for the two American species.

"*Megaceryle* Reichenb. 1851" Gray, 1855 (Cat. Gen. and Subgen. of Birds). Type "(*Alcedo maxima*, Pall.)."

As stated in my paper, "In specifying the *last* species as the type (*maxima* being the fourth and last species mentioned by Kaup) Gray was probably influenced by Reichenbach's ill-advised action (in 1851) in transferring *guttata* (*guttulata*) from *Megaceryle* back to true *Ceryle*, and by Bonaparte's removal (in 1854) of *torquata* and *alcyon* to his genus *Streptoceryle* leaving only the single species *maxima* in *Megaceryle*. Possibly also the fact of there being two *guttatas*, that of *Boddart* (= *maxima* Pallas) and that of *Vigors* (= *guttulata* Stejn.) made it seem undesirable to Gray to fix *guttata* as the type." *M. maxima* stood first both in Reichenbach's and Bonaparte's arrangements.

Chloroceryle and *Megaceryle* were proposed by Kaup in the same sentence, both as subgenera. Reichenbach credited both to Kaup, raising them to generic rank. Bonaparte credited *Chloroceryle* to Kaup, but for some unexplained reason or more probably through carelessness gave Reichenbach as the authority for *Megaceryle*. Gray, a year later, credited both genera to Reichenbach.

Five years later (1860) Cabanis and Heine proposed the name *Ichthyonomus** for the African species *M. maxima*, quoting as a synonym "*Megaceryle* Rehb. 1851 (nec Kaup 1848)," properly crediting *Megaceryle* to Kaup but restricting it to *guttata* and *lugubris*. It is not evident whether they overlooked or purposely ignored Gray's designation of *maxima* as the type of *Megaceryle*.

In the 'Hand-list of Birds' (1869) Gray followed the arrangement of Cabanis and Heine, thereby repudiating his original type

* In the Birds of North and Middle America (Pt. VI. p. 407) this name is erroneously quoted as "*Ichthyonomus*."

designation. Sharpe (Monograph Alcedinidæ, 1870, and Catalogue of Birds, 1892) also gave *guttata* as the type of *Megaceryle*. The A. O. U. 'Check-List' (Third Edition, 1910, p. 183) however, gives *maxima* as the type of *Megaceryle*, following Gray's original designation. Mr. Ridgway, on the other hand, follows Cabanis and Sharpe in considering *guttata* as the type.

The fact that Gray credited *Megaceryle* to Reichenbach does not, in my opinion, affect the validity of his designation of *maxima* as the type. Reichenbach himself gave Kaup as the authority for the genus, and used the name in the same sense except for the omission of *M. guttata*. Bonaparte, however, although accrediting the genus to Reichenbach, restored *M. guttata* to its former place. If *Megaceryle* Kaup and *Megaceryle* Reichenbach are not considered identical from a nomenclatural point of view, at least the latter can be treated as equivalent to a substitute name. In this case the type of *Megaceryle* Reichenbach, *M. maxima*, becomes *ipso facto* the type of *Megaceryle* Kaup. Dr. J. A. Allen has shown (Bull. Amer. Mus. Nat. Hist., 1910, 332) that *Ispida* Brisson 1760 may be considered a substitute name for *Alcedo* Linn. 1758, thus rendering *Ispida* a synonym and obviating the possible necessity of having to use *Alcedo* in place of *Megaceryle*. I have had some correspondence with Dr. Chas. W. Richmond regarding the nomenclature of this group and wish to express my indebtedness for his advice.

With *M. maxima* as the type of *Megaceryle* this becomes the proper generic name for the American species, it now being universally agreed that the latter are congeneric with the African species. Bonaparte in proposing *Streptoceryle* for *M. torquata* and *M. alcyon* considered *M. maxima* to be more nearly allied to *M. guttata* (= *guttulata*) than to the American species.

II. GENERIC AND SUBGENERIC CHARACTERS.

If the Asiatic species *M. guttulata* and *M. lugubris* are considered worthy of generic rank they must be given a new name. As stated in my note in 'The Auk' already mentioned, I do not believe this necessary for the following reasons: first, because the differences are virtually bridged by intermediates; second

because *M. alcyon* is nearly if not quite as distinct from *M. torquata* and *M. maxima* as is *M. guttulata*; third, because if *Megaceryle* is divided *Chloroceryle* must also be split up, for *C. amazona* stands alone in several respects.

A character of *M. guttulata* and *M. lugubris* that has not been pointed out is the considerably more extensive fusion of the third and fourth toes as compared with *M. torquata* and *M. alcyon*. In the former these toes are united to a point opposite the base of the claw of the second toe or sometimes even decidedly beyond; in the latter the union falls decidedly short of this point. *M. maxima* is perfectly intermediate; the toes are united just to the point mentioned or sometimes a little short of it. In this character *Ceryle* agrees with *Megaceryle torquata* and *M. alcyon*, while *Chloroceryle* agrees with *M. guttulata* and *M. lugubris*.

Further study has brought out additional characters separating the genera of Ceryine Kingfishers. In *Ceryle* and *Megaceryle* (*M. alcyon* and *M. torquata* examined) the greater secondary coverts of the under side of the wing although vestigial are distinct; in *Chloroceryle* (*C. amazona* and *C. americana* examined) these coverts are utterly wanting. In *Ceryle* and in *Chloroceryle* (all except *aenea* examined) the slip of the deep plantar tendon that supplies the hallux leaves the main tendon decidedly above the point where the latter trifurcates to supply the anterior toes. In *Megaceryle* (only *M. alcyon* examined) the four branches all originate at nearly the same point.

In *Megaceryle* (perhaps most so in *M. lugubris*) the planta tarsi is strongly papillose. In the three smaller species of *Chloroceryle* (subgenus *Amazonis*) the tarsus is not at all papillose while in *C. amazona* and *Ceryle* it is intermediate and apparently somewhat variable. Some specimens of *Ceryle* agree well with *Megaceryle*, in others the tarsus is less papillose. *Chloroceryle amazona* is nearer the smaller species of the genus, the tarsus never being as papillose as in *Megaceryle*.

I find that *Ceryle varia* agrees with *Chloroceryle amazona* and *Megaceryle* in having eighteen secondaries, these differing from the three smaller species of *Chloroceryle* which have but fourteen or fifteen secondaries. Dr. C. W. Richmond (Proc. U. S. Nat. Mus. 1893, 16, p. 511) states that the voice of *Chloroceryle*

amazona is quite different from that of the smaller species of the genus, much more resembling that of *Megaceryle alcyon* and *M. torquata*.

In my 'Revision' I quoted from 'P. Chalmers Mitchell's paper on the 'Anatomy of the Kingfishers' (Ibis, 1901, 120) regarding the deep plantar tendons of *Megaceryle* and *Chloroceryle*. Mr. Mitchell's description and figures show a striking difference between these two genera in the arrangement of the tendons. Of *Megaceryle* he described *M. maxima* and *M. alcyon*; of *Chloroceryle*, *C. americana* and *C. inda*. I have examined *M. alcyon*, *C. americana*, *C. inda*, *C. amazona* and *Ceryle varia*. My dissection of *M. alcyon* agrees essentially with that of Mitchell. On the other hand, my diagrams of the tendons of *Chloroceryle americana* and *C. inda* differ in important respects from Mitchell's figures of these species. They, as well as *C. amazona* and *Ceryle varia*, all agree essentially with each other and differ from Mitchell's figure of *M. alcyon* only in the position of the branch to the hallux. In *Megaceryle* the *flexor perforans digitorum* divides almost simultaneously into four branches, one for each toe, while in the other genera the slip for the hallux leaves the main tendon decidedly above the point where the tendon divides to supply the anterior toes. My dissections were made with great care, knowing that they did not agree with Mitchell's results, and a second specimen of *C. americana* was examined as a check upon the first; I therefore feel confident that the above statements are correct.

The following key shows the main differences, both internal and external, not only between the genera of the Cerylinae but also between the more marked groups of species.

- a DIASTATAXIC; acrotarsuim scutellate; anterior toes shorter; upper parts not green; sexes alike in color of axillars; maxillary bone abruptly and somewhat more broadly expanded.
- b A conspicuous vertical crest; bill stouter, its rami not overlapt by interramal plumage, the tomtia more or less distinctly serrate; tarsus and hallux shorter and stouter; tail more rounded, rectrices not widened terminally, somewhat pointed; plumage rather harsh and lusterless, partly blue-gray and rufus, with no large white areas in scapulars, secondaries, outer webs of primaries, nor tail; larger (wing more than

144 mm). Clavicle with no distinct process near proximal end; coracoid with an upstanding process at inner side of foot; spina sterni externa shorter; projection on outer edge of preilium conspicuous; lacrymal less swollen, reaching maxillary; tendinal slip to hallux arising at end of tendon (*Megaceryle*)

- c Culmen more curved and with thicker tip; crest larger; 3rd and 4th toes more extensively united.

Megaceryle lugubris

Megaceryle guttulata

- cc Culmen straighter and with more slender tip; crest smaller, 3rd and 4th toes less extensively united.

- d Bill stouter, the culmen nearly straight, the tomial serrations distinct; crest smaller; 10th primary nearer 6th than 7th (rarely exceeding 6th). Male with rufous in plumage; female with under wing-coverts rufous; larger (wing not less than 180 mm).

Megaceryle maxima

Megaceryle torquata

- dd Bill more slender, the culmen distinctly curved, the tomial serrations less distinct, often obsolete; crest larger; 10th primary nearer 7th than 6th (always decidedly longer than 6th). Male with no rufous; female with under wing-coverts white; smaller (wing not more than 170 mm).

Megaceryle alcyon.

- bb No vertical crest; bill more slender, its rami overlapt by interramal plumage, the tomia entire; tarsus and especially hallux longer and more slender; tail less rounded, rectrices broadened and obtusely rounded terminally; plumage soft and silky, wholly black and white, with large white areas in scapulars, remiges and rectrices; smaller, (wing less than 144 mm). Clavicle with a distinct process near proximal end; coracoid with no upstanding process at inner side of foot; spina sterni externa longer; projection on outer edge of preilium very small; lacrymal much swollen, not reaching maxillary; tendinal slip to hallux arising above end of tendon. (*Ceryle*).....*Ceryle varia*.

- aa EUTAXIC; acrotarsium not scutellate; anterior toes longer; upper parts glossy bronze-green; sexes differing in color of axillars; maxillary bone gradually and somewhat less broadly expanded. Other skeletal characters and plantar tendons as in *Ceryle varia*. (Differing further from *Megaceryle* in absence of vertical crest; entire tomia, and longer tarsus and hallux; and from *Ceryle* in more extensively fused anterior toes, shorter wing-tip, tenth primary shorter than sixth instead of longer; more rounded tail, and presence of rufous in plumage). (*Chloroceryle*).

- b* A conspicuous occipital crest; 18 secondaries; tail graduated for one-thirteenth of its length; 2nd toe with claw normally exceeding 4th without claw; outer webs of secondaries uniform green; green chest-band incomplete, the feathers not barred; larger (wing 125–146 mm)... *Chloroceryle amazona*.
- bb* Scarcely crested; 14 or 15 secondaries; tail graduated for one-fifth or one-sixth of its length; 2nd toe with claw rarely exceeding 4th without claw; outer webs of secondaries light-spotted; green chest-band complete, the feathers barred; smaller (wing 54–106 mm)..... *Chloroceryle americana*
Chloroceryle inda
Chloroceryle aenea

The interrelationships not expressed in the key may be briefly stated. *Megaceryle maxima* agrees with *M. lugubris* and *M. guttulata* in the pattern of the primaries and approaches them in the markings of the upperparts and in the extent of cohesion of the toes. *M. alcyon* resembles these same two species in the slight development of the tomial serrations, and approaches them in the curvature of the bill and the size of the crest. *M. torquata* is practically identical with *M. alcyon* in the union of the toes and in the color of the upperparts, but *M. t. stellata* recalls *M. maxima* in the pattern of the upper surface.

At the time my paper was written no skeleton of *Ceryle varia* was available and the skull only of *Chloroceryle amazona*. I now have a complete skeleton of each of these species and am able to compare them with skeletons of *Megaceryle alcyon*, *M. torquata* and *Chloroceryle americana*.

Chloroceryle amazona resembles *C. americana* in the coracoid, spina sterni, and preiliac process; in the form of the clavicle it is intermediate between its congener and *Megaceryle*.

As indicated in the accompanying key, *Ceryle* agrees with *Megaceryle* in the form of the expanded maxillary, and with *Chloroceryle* in the shape of the coracoid and clavicle, in the long spina sterni, in the narrow lacrymal, the descending process of which is greatly swollen and does not reach the maxillary, and in the small size of the preiliac process. The anterior edge of the sternal keel agrees with that of *Chloroceryle amazona* and both of these species are in this feature intermediate between *Megaceryle* and *Chloroceryle americana*. In the relation of the pars plana to the

descending process of the lacrymal *Ceryle* is intermediate between the two other genera.

In internal characters therefore, at least in the skeleton and the deep plantar tendons, *Ceryle* bears a much closer resemblance to *Chloroceryle* than to *Megaceryle*, agreeing better with the latter only in the somewhat broader maxillary. While this conclusion is probably correct it cannot be considered final until confirmed by examination of the remaining species, particularly *Megaceryle guttulata* or *M. lugubris*.

ONTARIO BIRD NOTES.

BY J. H. FLEMING AND HOYES LLOYD.

THE following notes refer chiefly to the birds of Toronto, Ontario, although there are some references to occurrences in other parts of the Province.

Since the senior author published his article "Birds of Toronto, Ontario,"¹ twelve years ago, there has been much change in conditions affecting bird-life near Toronto. The land birds have not been seriously affected. The ravines, especially those of the Don and Humber Rivers, form decided obstacles to the expansion of the city and still contain wooded tracts which provide shelter and food for many migrants. However, the Humber River is now flanked by an automobile road and since the completion of the Bloor Street Viaduct the ravines of the Don Valley, already cut up by railroads, will soon be absorbed in the ever-growing city.

There has been a large aerial training camp on the banks of the Don, from which aeroplanes have been flying in scores for the past three years, but they did not drive away the smaller birds. Large hawks and gulls have been seen, pursued by the cadets in their aeroplanes, and fleeing in terror before such huge

¹ Auk XXIII, pp. 437-453 and Auk XXIV pp. 71-89.

adversaries. This camp is now closed and the original birds of the air may resume their travels in peace.

The most important changes from an ornithological point of view are those on the water-front. Ashbridge's Bay, once the haunt of many rare species of shore-birds and water-fowl, is all but converted into a cement-walled turning basin for freight vessels, and large areas of the marsh have been filled and the reclaimed section is being rapidly built up with factories. Even a street-car line runs across a portion of it.

Toronto Bay is no longer seriously polluted by sewage. In 1913 two interceptors were put in service which cross the city from east to west and convey all but storm sewage to a Disposal Plant at the north-east corner of what was once Ashbridge's Bay. Here the sewage is sedimented, and the liquid portion carried 2900 feet off shore into Lake Ontario by an outfall sewer. The separated sludge is drained and air-dried in large open beds.

This series of changes in the water-front has had and will continue to have a considerable influence on bird life. The harbor, being free from sewage, provides a safe haven for water-fowl, for they are protected there at all times. There is probably little food there now, but there may be more as the water becomes purer.

As little unsedimented sewage is emptied into the harbor or lake the number of gulls must decrease as many depended on this source of food especially in the winter. Through the field-glasses gulls may be seen feeding over the point in Lake Ontario where the outfall sewer discharges, so evidently enough solid material escapes after sedimentation to provide food for some birds.

The sludge beds at the sewage disposal plant provide food for many waders. The sludge often swarms with the larvæ of a fly and with an annulid worm and fairly large flocks of shore-birds stop there on migration. They are safe and inaccessible while on these sewage beds, in fact, only an ardent ornithologist would stay to observe them. Considering all these points we can be sure that the marsh-birds, the waders, and the water-fowl will not visit us in anything like their former numbers, and those that do come, to the marsh particularly, will not remain long.

Colymbus holboëlli. HOLBØLL'S GREBE.—One taken at Toronto on March 5 and one on April 13, 1913, are early records, both in winter plumage.—J. H. F.

Colymbus auritus. HORNE GREBE.—On February 9, 1918, one was seen leisurely swimming among the drift ice in Lake Ontario near Toronto. It was -23° F. on February 5th, but rained on the night of February 8.—H. L.

Podilymbus podiceps. PIED-BILLED GREBE.—A male was taken at Toronto on April 2, 1918, by Mr. J. S. Carter. This is the earliest Toronto record and the bird had not yet assumed the adult male plumage.—H. L.

Larus marinus. GREAT BLACK-BACKED GULL.—A bird, not fully adult, was taken at Toronto Island October 31, 1914.—J. H. F.

Sula bassana. GANNET.—On November 5, 1918, Thomas and Duncan McDonnell shot a Gannet on Lake Ontario, near Gibraltar Point, Toronto. I obtained the bird from them in the flesh and found that it was a male (?) in immature plumage. Its stomach was empty but the bird appeared to be in good condition. There is one previous Toronto specimen¹ and about 4 others from the rest of the Province of Ontario, one being from Oshawa, one from Hamilton and two from Ottawa have been recorded.—H. L.

Mergus americanus. MERGANSER.—During August, 1916, a family of Mergansers regularly swam past my cottage, in the Narrows of Lake Joseph, Muskoka. On the tenth I made a careful count and found one adult female in charge of thirty-one young, one of which was noticeably smaller than the others. The flock usually passed only a few yards from the house but there was only the one old bird.—J. H. F.

This is corroborated although the bird may have been a Red-breasted Merganser by the following note. On July 5, 1909, as I came into Lake Obabika from Wakimika Creek, Temagami Forest Reserve, Ontario, a Merganser swam out ahead of me and she was the proud possessor of thirty-seven ducklings.—H. L.

Mergus serrator. RED-BREASTED MERGANSER.—A female taken near West Hill, Ontario, from a small flock, on May 9, 1916, is the latest spring record for the Toronto district. West Hill is about 8 miles east of Toronto.—H. L.

Marila affinis. LESSER SCAUP DUCK.—The latest Toronto date is October 29, 1895. On November 21, 1913, I took a male at Lake Scugog about sixty miles north-east of Toronto.—H. L.

Marila collaris. RING-NECKED DUCK.—On November 5, 1918, Mr. C. A. H. Clark shot one in the plumage of the female over our decoys at Honey Harbor, Muskoka District, Ontario.—H. L.

Oidemia deglandi. WHITE-WINGED SCOTER.—I examined an adult male at Toronto May 14, 1913, and saw a large flock at the mouth of the Niagara River on May 18, 1914. Mr. J. Hughes Samuel noted in his diary in 1897 large flocks seen May 26, one bird on June 3, and from

¹ Fleming, Auk XXX, p. 225.

November 20 to December 15, on Toronto Bay. Mr. Lloyd has a young male taken on Lake Ontario October 20, 1904, and he saw one which had just been killed at Scarboro Heights, Toronto, on November 11, 1916.—J. H. F.

Oidemia perspicillata. SURF SCOTER.—A female was taken on Lake Ontario near Toronto on September 27, 1907.—H. L.

Chen hyperboreus hyperboreus. SNOW GOOSE.—An adult taken at Weller's Bay, Prince Edward County, on Lake Ontario, October 21, 1916, is now in the Provincial Museum, Toronto.—J. H. F.

Chen caerulescens. BLUE GOOSE.—An adult female shot on November 2nd, 1914, at Port Rowan on Lake Erie is in the collection of Mr. John Maughan. An immature female was shot by Mr. Bert Gardner at Point Pelee on October 21st, 1916, the upper and lower mandibles of this specimen were black becoming flesh purple at base, commissure dusky black; legs and feet dark lead gray (plumbeous), webs dusky. Another immature bird was taken on the Holland River near Schomberg, in York County, on November 6th, 1916. The bird was in poor condition and had probably been previously wounded. This and the other immature bird were in dark gray plumage.—J. H. F.

Olor columbianus. WHISTLING SWAN.—A flock of about twenty settled in Ashbridge's Bay, Toronto, on the evening of April 17th, 1914, leaving next morning. One was killed at Whitby, thirty miles east of Toronto, on Lake Ontario on the 18th.—J. H. F.

Herodias egretta. EGRET.—A bird, without dorsal plumes, was killed on August 3rd, 1916, in Dundas County, Ontario, and identified by Mr. Oliver Spanner. It was subsequently mounted by a local taxidermist, but I have been unable to learn who owns it at present.—J. H. F.

Rallus elegans. KING RAIL.—One taken at Picton, Bay of Quinte, on March 28, 1917, is in the Provincial Museum, Toronto.—H. L.

Rallus virginianus. VIRGINIA RAIL.—One taken on November 10, 1906, at Toronto, is in my collection. This is the latest record.—J. H. F.

Porzana carolina. SORA RAIL.—Specimens taken on October 12, 1904; October 15, 1914; and October 17, 1914, are late Toronto dates.—H. L.

Calidris leucophæa. SANDERLING.—A specimen was taken at Toronto on September 15, 1905, a late fall date.—H. L.

Limosa hæmastica. HUDSONIAN GODWIT.—One was shot on September 18th, 1912, on the Eastern Sandbar, Ashbridge's Bay, Toronto, by Mr. H. M. Sheppard. The bird was flying in company with nine Golden Plover, some of which were taken at the same time. The record is based on a letter written by the late S. T. Wood, who published an account of the occurrence in the 'Globe' of October 12th, 1912.—J. H. F.

Helodromas solitarius solitarius. SOLITARY SANDPIPER.—Spring occurrences are rare in Ontario. On May 16, 1918, three were seen at Coldstream, Ontario, and one taken; and on May 23, 1918, two were tak-

en at Toronto. The latest fall date recorded for Toronto is September 16, 1891. Later specimens have been taken at Toronto as follows: Sept. 15, 1917; Sept. 30, 1916, and October 2, 1907.—H. L.

Accipiter cooperi. COOPER'S HAWK.—Winter and spring records are unusual in the Toronto region. One was taken on December 6th, 1890, at Toronto; one on January 23rd, 1915, at Oakville, 19 miles west of Toronto; one on February 8th, 1907, at Newmarket, 34 miles north of Toronto; one at Toronto, on March 8th, 1913; all immature birds. A full plumaged adult male was taken on April 30, 1914; and another adult on April 6th, 1918, at Toronto.—J. H. F.

Aquila chrysaetos. GOLDEN EAGLE.—One was taken alive at Palgrave, in Peel County, on November 1 th, 1915, and sent to Toronto. Palgrave is about 32 miles north-west of Toronto.—J. H. F.

Haliaeetus leucocephalus alascanus. NORTHERN BALD EAGLE.—An adult male Bald Eagle was shot at Scarboro Bluffs, Toronto, on January 26, 1918. The bird was in poor condition from starvation. January was an exceptionally cold month, with a heavy fall of snow.—H. L.

Pandion haliaetus carolinensis. OSPREY.—One shot on April 16, 1904, at Toronto Island is an early record, and two taken on September 10, 1913, and October 11, 1915, respectively, are late records.—H. L.

Asio wilsonianus. LONG-EARED OWL.—Late Toronto dates are: November 10, 1917; November 11, 1918; November 14, 1914; November 18, 1916; and December 19, 1914.—H. L.

Bubo virginianus. HORNED OWL.—The senior author has already recorded a migration of Horned Owls into Southern Ontario that occurred during the winter of 1907-'08,¹ and though much the largest up to that time, it was insignificant compared with the movement that took place between the last week of October, 1917, and the end of January, 1918. The resident form *Bubo virginianus virginianus* seems to have had warning, and moved out ahead of the rush from the north; the last one was examined on October 22nd and the local bird did not reappear till towards the end of the following January after the last of the invaders had gone home or been killed. The only exception noted was a typical resident bird taken on December 25. The first non-resident bird appeared on the 27th of October and by the second week of November the movement had assumed large proportions, commencing to slow up early in December, and had virtually ceased by the middle of that month, though a few loiterers continued to be taken up to the third week of January and a dark male referred to *subarcticus*, was taken on March 16th, 1918. In all, about one hundred and twenty-five Horned Owls were examined, of these, quite one hundred were taken in the immediate vicinity of Toronto, and the others within a radius of sixty miles. The owls were in good condition, some had obviously eaten skunk, some had eaten cottontails and muskrats, and a few had eaten mice, but the majority found poultry the easiest food,

¹ Auk, 1908, p. 487.

and from what was learned, there must have been serious losses of pure bred stock, besides the large number of ordinary fowls destroyed; at least the owls had managed to keep fat, during one of the coldest winters known in Southern Ontario.

Believing the owls had probably not arrived in one flight, fifty-three were gathered together in the workshops of Mr. Oliver Spanner, from among those taken before the middle of December; and on sorting them some support for this theory was found. There were twenty seven Arctic Horned Owls, *Bubo virginianus subarcticus*, representing both the light and dark phases; ten were referred to the Labrador Horned Owl, *Bubo virginianus heterocnemis*, some of them very dark; of the remainder fifteen were difficult to place, the majority were darker than the Great Horned Owl, *Bubo virginianus virginianus*, usually resident here, and possibly some were colour phases of the Labrador bird. An owl taken on October 22nd belonged to the resident type. The remaining one taken at Toronto on November 12th was perhaps the most interesting; it was light but with much more ochraceous, than any of the Arctic Horned Owls with which it was compared and approached closely a skin of *Bubo virginianus occidentalis*, Stone, from North Dakota, from which it differed, in having less ochraceous at the base of the feathers, and darker edgings to the feathers of the breast and back. The first Arctic Horned Owls were taken on October 27th, but the migration was not in full swing till the middle of November, when birds dark enough to be assigned to the Labrador Horned Owl began to come with the lighter coloured ones, and after that the two were mixed together in the same territory. Though it was impossible to assign any route for the migration, it is likely the owls, on reaching the north shore of Lake Ontario, drifted east. The information about the food conditions is largely due to the interest taken in the matter by Mr. H. M. Sheppard, who skinned and mounted many of the owls.—J. H. F.

Chordeiles virginianus virginianus. NIGHTHAWK.—One was seen on September 30, 1918, and four on October 10, 1918, at Toronto. The last ones were observed at close range for some time.—H. L.

Archilochus colubris. RUBY-THROATED HUMMINGBIRD.—It is not always easy to tell when the adult Hummingbirds leave Ontario. On July 5th, 1911, after one of the hottest weeks ever recorded in Southern Ontario, the adult male Ruby-throats began to pass through my garden in Toronto, and from then until the 18th, at least one was seen every day. In 1914, I saw adult males in the garden from July 8th to 10th, when they disappeared, and no more Hummingbirds were seen till white throated birds appeared on the 26th, and were present every day till August 9th, but it was impossible to tell if there were any old females among them. At Lake Joseph, Muskoka, I met with a family party consisting of the old brds and two fully fledged young on August 17th, 1917, which would indicate that the old birds do not all leave in July.—J. H. F.

Tyrannus tyrannus. KINGBIRD.—One was taken at Rosebank, Ontario, which is 18 miles east of Toronto, on May 10, 1915. This is an early date for the Toronto district.—H. L.

Sayornis phœbe. PHŒBE.—The latest Toronto date is November 3, 1917, when a specimen was taken.—H. L.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—Near Toronto, on August 17, 1918, a female was secured. The only other specimen, other than spring migrants, which has been procured at Toronto, was taken August 9, 1899.¹ Two spring migrants were seen this year, 1918, on May 27th and one on June 8th.

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER.—On September 14, 1918, these flycatchers were fairly common in a small ravine of the Don Valley, near Toronto. They were difficult to observe, but five were recorded. The identification was confirmed by specimens.—H. L.

Empidonax trailli alnorum. ALDER FLYCATCHER.—In dense wil-
lows, on the Scarboro cliffs, near Toronto, two of these birds were taken in midsummer, one a male, on July 18, 1905, and the other on August 4, 1905. This flycatcher has not previously been recorded in summer and the last bird taken was uttering the characteristic note of the species.—H. L.

Empidonax minimus. LEAST FLYCATCHER.—A new, early Toronto date is May 6, 1905; and a new late date August 31, 1918. Both are confirmed by specimens.—H. L.

Otocoris alpestris praticola. PRAIRIE HORNED LARK.—Four Horned Larks were taken from a large flock on November 24, 1917, all males. They were submitted to Dr. H. C. Oberholser, for examination, and his identification, which is of interest, is quoted below:

"They prove to be of considerable interest, and a word or two concerning them may be desirable. Three of them are nearly typical *Otocoris alpestris praticola*, although they have rather bright yellow throats. The fourth specimen is much more brownish on the upper parts and seems to be more or less intermediate between *Otocoris alpestris praticola* and *Otocoris alpestris hoyti*, with possibly a strain of *Otocoris alpestris alpestris* in rather yellowish eyebrow. The bird is, however, altogether too small for either *Otocoris alpestris alpestris* or *Otocoris alpestris hoyti*."

Corvus brachyrhynchos brachyrhynchos. CROW.—Two albino Crows were taken from the nest by Mr. Ernest Dunn on June 29, 1908, at a spot nine miles north of Toronto. Both birds were grayish white, the eyes blue-gray; the feet lead-black; and the beaks horn colour.—J. H. F.

Sturnella magna magna. MEADOWLARK.—I saw a flock of these birds that numbered between twenty and thirty, on January 14, 1913,

¹ Auk, XXIV, 1907, 77.

near Glenwilliams, in Halton County. It is not unusual to have one or two wintering about the farm buildings, but a flock of any size is rare.—J. H. F.

Euphagus carolinus. RUSTY BLACKBIRD.—One was taken from a flock on March 30, 1904, which is an early Toronto record, and one taken on November 5, 1904, is late.—H. L.

Hesperiphona vespertina vespertina. EVENING GROSBEAK.—A flock was reported at Glenwilliams, in Halton County, on April 3, 1913, and on December 27, I examined two males that had been taken at Toronto. Two more males were taken at Oshawa, thirty-eight miles east of Toronto, on March 22, 1914. The late S. T. Wood saw a flock at East Toronto on February 18, 1915.—J. H. F.

Pinicola enucleator leucura. PINE GROSBEAK.—An early fall date for Toronto is October 24, 1903, when a male was taken.—H. L.

Loxia leucoptera. WHITE-WINGED CROSSBILL.—These birds were abundant, in flocks, at Sutton, Ontario, on the South Shore of Lake Simcoe, on November 5, 1915. An early fall date for Toronto was November 16, 1917, when one was taken.—H. L.

Zonotrichia albicollis. WHITE-THROATED SPARROW.—Late Toronto dates are October 26, 1918, and October 31, 1914.—H. L.

Melospiza georgiana. SWAMP SPARROW.—A late Toronto date is October 20, 1917, when a specimen was taken.—H. L.

Cardinalis cardinalis cardinalis. CARDINAL.—A male was taken on December 3, 1917, near the Humber River, Toronto, and afterwards examined by me.—J. H. F.

Zamelodia ludoviciana. ROSE-BREASTED GROSBEAK.—Fall records are rare. A male was taken at Toronto on August 19, 1913, and a female on September 18, 1915.—H. L.

Passerina cyanea. INDIGO BUNTING.—Additional Toronto fall dates are August 12, 1916, and September 3, 1917.—H. L.

Piranga erythromelas. SCARLET Tanager.—There were more Tanagers than usual in my garden at Toronto, during September, 1913; on the 14th I took an adult male, on the 18th I saw two, one of which had the black wings of the male; one was seen on the 19th and one on the 20th; two seen on the 22nd one of which proved to be a female; the last seen on the 27th.—J. H. F.

Progne subis subis. PURPLE MARTIN.—The earliest Toronto date is given as April 18th. On April 6, 1904, about 5 p. m. a male came to my bird-house in Toronto, leaving immediately. This, or another, a male, came to the house on April 10th of the same year and remained perched on the house for some time.—H. L.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—At West Hill, Ontario, about 8 miles East of Toronto City limits, and not far from the shore of Lake Ontario, I found two adult and four young of this species on July 20, 1918. The young birds were flying well at that date. This

extends the range of this species eastward a few miles more on the north shore of Lake Ontario.¹ Specimens were taken, which proved the identity of the species. As it is understood specimens were taken on the Rideau River, during the summer of 1918, a general extension of range may be occurring.—H. L.

Vireosylva philadelphica. PHILADELPHIA VIREO.—The latest spring date is June 2, 1917, when a female was taken at Toronto. They were common on the morning of May 22, 1918, when at least twelve were seen in a section of the Don Valley and several were taken.—H. L.

Vermivora rubricapilla rubricapilla. NASHVILLE WARBLER.—The earliest spring date is April 29, 1905, when a male was taken at Toronto. The latest fall date is September 28, 1918, when another was secured.

Vermivora peregrina. TENNESSEE WARBLER.—The latest spring date recorded for Toronto is May 22. One was seen on May 31, 1917, and a female taken on June 7, 1907. Early fall records are, an immature bird taken on August 17, 1914, and one taken on September 9, 1913.—H. L.

Dendroica tigrina. CAPE MAY WARBLER.—A male seen on May 31, 1917, at Toronto, is the latest spring record. A moulting male, taken on August 22, 1908, and one seen at Toronto Island, on August 23, 1915, are early fall records. In 1913, Cape May Warblers were passing through my garden, at Toronto, from September 12 to 21.—J. H. L.

Dendroica coronata. MYRTLE WARBLER.—The earliest spring record for Toronto is a female, taken on April 23, 1904.—H. L.

Dendroica magnolia. MAGNOLIA WARBLER.—The latest spring record for Toronto is a male taken on June 6, 1907, and the latest fall record is a female taken on October 16, 1915.—H. L.

Dendroica cerulea. CERULEAN WARBLER.—On May 23, 1918, I took a female Cerulean Warbler near Toronto. I was watching another warbler, which I considered to be a Parula Warbler, when it pursued a plainer bird across a stream. I followed and took the plainer one of the two, which proved to be a Cerulean Warbler. I concluded at once that the pursuing bird had been a male of the same species but did not see it again. There are seven or eight previous Toronto records at least one of which is a female taken in 1856.¹—H. L.

Dendroica castanea. BAY-BREASTED WARBLER.—This is one of the warblers that has increased as a migrant at Toronto, within the last twenty years. The first record of the bird being in any numbers, is in the diary of the late J. Hughes Samuel under date of May 19th, 1898, at Toronto Island. "Bay-breasted Warblers were astonishingly numerous,—so much so that I counted twelve feeding on the ground at one time and in a space of a few feet." This warbler breeds in Nipissing District, as

¹ Auk, XXXIV, 460.

¹ Auk, XXIV, 1907, 84.

a breeding pair was taken on July 11th, 1906, at Annina, Nipissing (near Latchford) by Mr. W. B. Rubridge. Of late years it has become a fairly common and regular migrant, during August and September at Toronto, though in 1907, there was only one to record, and we have young birds taken there between August 13th and September 9th, and one from Lake Joseph, Muskoka, on September 17th, 1907. We have adults from Toronto in full moult taken between August 10th and 29th; and adult males taken on August 17, 1918, September 2, 1918, September 2nd, 1908, and September 30th, 1907, and one adult female taken September 22, 1917.

Dendroica striata. BLACK-POLL WARBLER.—The latest spring date for Toronto is a female taken on June 7, 1907.—H. L.

Dendroica fusca. BLACKBURNIAN WARBLER.—The latest Toronto spring dates are a female taken on June 7, 1907, and a male taken on June 8, 1907.—H. L.

Dendroica vigorsii. PINE WARBLER.—The latest spring date for the Toronto district is a male, taken at Etobicoke Creek, by Mr. Osborne H. Shenstone on May 31, 1902.—H. L.

Seiurus aurocapillus. OVEN-BIRD.—The latest fall dates for Toronto are a female taken on September 28, 1918, and another taken on October 2, 1908.—H. L.

Icteria virens virens. YELLOW-BREASTED CHAT.—A female was taken at Coldstream, Middlesex County, Ontario, on May 14, 1918.—H. L.

Wilsonia pusilla pusilla. WILSON'S WARBLER.—The earliest spring record for Toronto is a male taken on May 10, 1904.—H. L.

Wilsonia canadensis. CANADIAN WARBLER.—This species has not yet been recorded as breeding at Toronto. The birds were found on four different occasions in June, one in July, and three in August in the same section of the Don Valley during the summer of 1918.—H. L.

Toxostoma rufum. BROWN THRASHER.—A female taken on October 8, 1917, is the latest fall date for Toronto.—H. L.

Thryothorus ludovicianus ludovicianus. CAROLINA WREN.—The first Toronto record was taken in my garden on May 20, 1917, a male in worn plumage.—J. H. F.

Sitta canadensis. RED-BREASTED NUTHATCH.—A male was taken at Toronto on May 20, 1916. This is the latest spring date.—H. L.

Regulus calendula calendula. RUBY-CROWNED KINGLET.—Specimens were taken at Toronto on August 31, 1918, September 19, 1916, and September 21, 1908, which are all earlier than recorded fall dates.—H. L.

Polioptila cærulea cærulea. BLUE-GRAY GNATCATCHER.—A female was taken at Coldstream, Middlesex County, Ontario, on May 14, 1918.—H. L.

Planesticus migratorius migratorius. ROBIN.—Late fall and winter dates are November 3, 1917, November 24, 1917, and December 10,

1904. Between August 28 and September 7, 1918, Mr. Robert Moorcroft obtained four, which had been killed or wounded by wires, at the same street corner. He saw many others, during the same few days, and says he has found dead or wounded Robins, at the same place, for some time past. The stomachs were empty in each case, so that the birds are evidently killed during the night or before feeding in the morning. A few high wires pass over a small wooded park at this corner but no definite reason can be given for high Robin mortality at this point.—H. L.

267 Rusholme Road, Toronto, Ontario.

406 Queen St., Ottawa.

SEVENTEENTH SUPPLEMENT TO THE AMERICAN ORNITHOLOGISTS' UNION CHECK-LIST OF NORTH AMERICAN BIRDS.

THE Sixteenth Supplement, the only one since the appearance of the Third (1910) Edition of the American Ornithologists' Union 'Check-List of North American Birds,' was published in July, 1912. Since that time it has for various reasons not been expedient to publish further decisions. The Committee on Nomenclature, since its reorganization at the A. O. U. meeting in November, 1919, has decided to begin the preparation of a new A. O. U. 'Check-List'. This is undertaken as part of the cooperation between the British Ornithologists' Union and the American Ornithologists' Union in the production of a series of lists of the birds of the several zoogeographical regions of the world, and will probably be issued as the Nearctic volume of the proposed 'Systema Avium.'

Since the publication of the last A. O. U. 'Check-List' the great activity among American ornithologists has resulted in an almost unbelievable number—several hundreds—of additions and changes most of which have been listed from time to time in 'The Auk' and will have the consideration of the A. O. U. Committee. As fast as these cases are disposed of, it is planned to publish the decisions in supplements to the 'Check-List,' in order that those who have occasion to use the names of North American birds may have the benefit of the opinions of the Committee.

The present supplement is made up almost wholly of purely nomenclatural changes and represents a considerable portion of such cases now pending. The number of additions and changes here treated is 32; of rejections, 35.

Committee	{	WITMER STONE, <i>Chairman</i>
		HARRY C. OBERHOLSER, <i>Secretary</i>
		JONATHAN DWIGHT
		T. S. PALMER
		CHARLES W. RICHMOND

ADDITIONS AND CHANGES OF NOMENCLATURE.

Megalestris Bonaparte becomes **Catharacta** Brünnich (Ornith. Boreal., 1764, p. 32), because the latter has for its type, by subsequent designation of Reichenbach 1851, *Catharacta skua* Brünnich, and, furthermore, is not preoccupied by *Catarractes* Brisson, a word of different classical ending. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, p. 498; Oberholser, 'The Auk,' XXXVI, No. 3, July, 1919, p. 418.) The only North American species is

35. **Catharacta skua** Brünnich.

Subgenus **Thalasseus** Boie becomes **Hydroprogne** Kaup (Skiz. Entw.-Gesch. Nat. Syst. Eur. Thierw., 1829, p. 91; type by subsequent designation [Gray, Genera Birds, III, 1846, p. 658], *Sterna caspia* Pallas), because the type of *Thalasseus* is *Sterna sandvicensis* Latham, and *Hydroprogne* Kaup is the earliest available name for the present group. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, pp. 497-498.)

Subgenus **Actochelidon** Kaup becomes **Thalasseus** Boie, because the type of *Thalasseus* proves to be, by designation of Gray (List Gen. Birds, 1840, p. 79) (cf. Stone, Science, N. S., XXVI, No. 666, Oct. 4, 1907, p. 445; Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, pp. 497-498), *Sterna cantiaca* Gmelin (= *Sterna sandvicensis* Latham), which designation the previous action of Kaup in proposing *Actochelidon* with the same species as type does not nullify.

Hydrochelidon Boie becomes **Chlidonias** Rafinesque (Kentucky Gazette, I, No. 8, Feb. 21, 1822, p. 3, col. 5; type by monotypy, *Chlidonias melanops* Rafinesque (= *Sterna surinamensis* Gmelin) (cf. Rhoads, 'The Auk,' XXIX, No. 2, April, 1912, pp. 197-198), because the latter name has priority. The North American forms of this genus are:

77. **Chlidonias nigra surinamensis** (Gmelin).

78. **Chlidonias leucoptera leucoptera** (Temminck).

Thalassidroma Vigors becomes **Hydrobates** Boie (Isis, 1822, col. 562; type, by subsequent designation [Gray, List Genera Birds, 1840, p. 78], *Procellaria pelagica* Linnaeus), because the latter name is of earlier date, and is not invalidated by *Hydrobata* Vieillot, a word with a different classical ending. (Cf. Hartert, Hand-List British Birds, 1912, p. 149.) The only North American species is:

104. **Hydrobates pelagicus** (Linnaeus).

Aestrelata Bonaparte becomes **Pterodroma** Bonaparte (Compt. Rend. Ac. Sci., XLII, May, 1856, p. 768; type by subsequent designation [Salvin, Cat. Birds Brit. Mus., XXV, 1896, p. 397], *Procellaria macrop-tera* Smith), because the earliest place of publication of both *Aestrelata* and *Pterodroma* proves to be Comptes Rendus, XLII, May, 1856, p. 768, and here *Pterodroma* has anteriority. (Cf. Mathews, Birds Australia, II, pt. 2, July 31, 1912, p. 131.)

Sula cyanops Sundevall becomes **Sula dactylatra** Lesson (Voyage Coquille, I, April, 1829, p. 494; Ascension Island). (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, pp. 9-10.) While *Sula dactylatra* is not with certainty determinable at the original place of publication in the 'Voyage of the Coquille,' Lesson himself soon afterward (Traité d'Ornith., 1831, p. 601) made its identity certain. It should, however, date from its first introduction.

Moris Leach, Syst. Cat. Spec. Indig. Mamm. and Birds Brit. Mus., after August, 1816, p. 35 (type by monotypy, *Moris bassana* [= *Pelecanus bassanus* Linnaeus]). Recognized as a genus, and adopted because considered neither a nomen nudum, nor preoccupied by *Morus* Bolten, although *Morus* Vieillot, also proposed for the gannets, having a termination differing merely in grammatical gender from *Morus* Bolten, is thereby invalidated. The name *Sulita* Mathews (Austral-Avian Record, II, No. 7, Jan. 28, 1915, p. 123; type by original designation and monotypy, *Pelecanus bassanus* Linnaeus), proposed in place of *Moris* and *Morus*, becomes now also a synonym of *Moris* Leach. (Cf. Oberholser, 'The Auk,' XXXVI, No. 3, July, 1919, p. 417.) The only North American species of this group will therefore now stand as

117. **Moris bassana** (Linnaeus).

Ibididae becomes **Threskiornithidae**, because the type of the genus *Ibis* proves to be a stork, *Tantalus ibis* Linnaeus; and the proper name for the genus *Ibis*, the type genus of the family, now becomes *Threskiornis* Gray. (Cf. Mathews, 'The Auk,' XXX, No. 1, January, 1913, p. 95; Richmond, Proc. U. S. Nat. Mus., LIII, August 16, 1917, pp. 580, 636.)

Herodias Boie becomes **Casmerodius** Gloger (Gemein. Hand-und Hilfsb. Naturg., 1842, p. 412; type by subsequent designation [Sharpe, Cat. Birds Brit. Mus., XXVI, 1898, p. 88], *Ardea egretta* Gmelin), because the type of *Herodias* Boie is, by subsequent designation (Gray, List Gen. Birds, ed. 2, 1841, p. 86) *Ardea garzetta* Gmelin

(cf. Stone, Science, N. S., XXVI, No. 666, Oct. 4, 1907, p. 445), making *Herodias* thus a synonym of *Egretta* Forster. The earliest available name for the present genus is therefore *Casmerodius* Gloger. The only North American species is

196. **Casmerodius egretta** (Gmelin).

Clangula Oken becomes **Glaucionetta** Stejneger (Proc. U. S. Nat. Mus., VIII, Oct. 9, 1884, p. 409; type by original designation, *Anas clangula* Linnaeus), since *Clangula* Oken proves to be a nomen nudum (cf. Committee British Ornithologists' Union, List Brit. Birds, 1915, p. 384); *Glaucion* Kaup to be preoccupied by *Glaucion* Oken (Mollusca, 1816); and *Bucephala* Baird to be invalidated by *Bucephalus* Baer (Vermes, 1827). The North American forms are:

151. **Glaucionetta clangula americana** (Bonaparte).

152. **Glaucionetta islandica** (Gmelin).

Harelda Stephens becomes **Clangula** Leach (in Röss' Voyage Disc., 1819, append., p. xlviii; type by monotypy, *Anas hyemalis* Linnaeus), as this is the oldest tenable name for the genus. (Cf. Hartert, Hand-List Brit. Birds, 1912, p. 142.) The employment of *Clangula* Leach in the above sense now proves necessary since it was based exclusively on the Old-squaw, and since *Clangula* Oken (Isis, I, 1817, col. 1183), along with the other Oken generic names published in the same connection, are considered nomina nuda because not definitely referring to Cuvier's groups. (Cf. Committee British Ornithologists' Union, List Brit. Birds, 1915, p. 384.) The only species of this genus will now stand as

154. **Clangula hyemalis** (Linnaeus).

Scolopacinae is recognized as a subfamily of **Scolopacidae**, to include Nos. 227 to 230.1 of the A. O. U. Check-List. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VIII, 1919, pp. 145-146.)

Macrorhamphus Forster becomes **Limnodromus** Wied (Beitr. Naturg. Brasil, IV, Abth. 2, 1833, p. 716; type, by monotypy, *Scolopax grisea* Gmelin), because *Macrorhamphus* Forster 1817 is preoccupied by *Macrorhamphus* Fischer 1813, and *Limnodromus* becomes the earliest available name. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 22.) The North American forms of the genus are:

231. **Limnodromus griseus griseus** (Gmelin).

232. **Limnodromus griseus scolopaceus** (Say).

Eroliinae is recognized as a subfamily of **Scolopacidae**, to include Nos. 231 to 252, 260, and 262, of the A. O. U. Check-List (cf. Lowe, Ibis, 10th ser., III, No. 3, July, 1915, pp. 609-616; Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VIII, 1919, pp. 146-147); but becomes **Canutiinae**, because *Canutus* [anonymous], not *Erolia* Vieillot, is the type genus of this subfamily. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXII, Dec. 31, 1919, p. 200.)

Pisobia aurita (Latham) becomes **Pisobia acuminata** (Horsfield) (*Totanus acuminatus* Horsfield, Trans. Linn. Soc. Lond., XIII, May,

1821, p. 192; Java), because *Tringa aurita* Latham proves to have been based on a drawing of *Actitis hypoleuca* (Linnaeus). (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 7.)

Calidris Illiger becomes **Crocethia** Billberg (Synop. Faunae Scand., I, pars 2, 1828, tab. A; p. 132; type, *Tringa arenaria* Linnaeus), because *Calidris* Illiger is preoccupied by *Calidris* [anonymous] 1804. (Cf. Richmond, Proc. U. S. Nat. Mus., LIII, Aug. 16, 1917, p. 581; Mathews and Iredale, Austral Avian Record, III, No. 5, Dec. 28, 1917, p. 114.) The only species:

Calidris leucophaea (Pallas) becomes **Crocethia alba** (Pallas) (*Trynga alba* Pallas, in Vroeg, Cat. Col. Oiseaux, Oct. 6, 1764, p. 7; coast of North Sea), by reason of the change of the generic name *Calidris* to *Crocethia* (cf. *supra*), and the rejection of *Tringa leucophaea* "Pallas" as non-binomial. (Cf. Stone, 'The Auk,' XXIX, No. 2, April, 1912, p. 208.)

Tringinae is recognized as a subfamily of Scolopacidae, to include Nos. 253 to 259, 261, 263, and 264 to 268 of the A. O. U. Check-List (cf. Lowe, Ibis, 10th ser., III, No. 3, July, 1915, pp. 609-616; Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VIII, 1919, pp. 147-149); but becomes **Numeniinae**, because *Numenius* Brisson, not *Tringa* Linnaeus, is the type genus of this subfamily. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXII, Dec. 31, 1919, p. 200.)

Helodromas Kaup becomes **Tringa** Linnaeus, because the type of *Tringa* Linnaeus is, by tautonymy, *Tringa ocropus* Linnaeus. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, pp. 5-6.) The North American forms will therefore now stand as follows:

256. **Tringa solitaria solitaria** Wilson.

256a. **Tringa solitaria cinnamomea** (Brewster).

257. **Tringa ocropus** Linnaeus.

Heteractitis Stejneger becomes **Heteroscelus** Baird (Rep. Explor. and Surv. R. R. Pac., IX, 1858, p. 734; type by monotypy, *Totanus brevipes* Vieillot); since *Heteroscelus* Baird 1858 is not invalidated by *Heteroscelis* Latreille 1825. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 5; Oberholser, 'The Auk,' XXXVI, No. 2, April, 1919, pp. 278-279.) The North American species will therefore stand as

259. **Heteroscelus incanus** (Gmelin).

Charadrius Linnaeus becomes **Pluvialis** Brisson (Ornith., V, 1760, p. 42; type by tautonymy, *Charadrius apricarius* Linnaeus), because *Charadrius* Linnaeus proves to apply to the genus known as *Aegialitis* (cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, pp. 5-6), and *Pluvialis* Brisson is the earliest tenable name for the Golden Plovers. The North American forms are:

271. **Pluvialis apricaria** (Linnaeus).

272. **Pluvialis dominica dominica** (Müller).

272a. **Pluvialis dominica fulva** (Gmelin).

Aegialitis Boie becomes **Charadrius** Linnaeus, because the type of *Charadrius* Linnaeus is, by tautonymy, *Charadrius hiaticula* Linnaeus. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, pp. 5-6.) The North American species are:

274. **Charadrius semipalmatus** Bonaparte.

275. **Charadrius hiaticula** Linnaeus.

276. **Charadrius dubius** Scopoli.

277. **Charadrius melodus** Ord.

278. **Charadrius nivosus** (Cassin).

279. **Charadrius mongolus** Pallas.

Chaemepelia passerina terrestris (Chapman) becomes **Chaemepelia passerina passerina** (Linnaeus) (*Columba passerina* Linnaeus, Syst. Nat., ed. 10, I, 1758, p. 165; "America inter tropicos"), because Bonaparte in 1855 was the first author to fix the type locality of *Columba passerina* Linnaeus, and he restricted it to North America. (Cf. Todd, Annals Carnegie Mus., VIII, 1913, p. 533.)

Catharista Vieillot becomes **Coragyps** Geoffroy (Le Maout, Hist. Nat. Oiseaux, 1853, p. 66; type, *Vultur urubu* Vieillot), because the type of the former proves to be *Vultur aura* Linnaeus, and *Coragyps* Geoffroy is therefore the earliest tenable generic name for the Black Vulture. (Cf. Stone, Princeton Patag. Exped., II, pt. IV, 1915, p. 540; Chubb, Birds Brit. Guiana, I, 1916, p. 208.) The only North American form is

326. **Coragyps urubu urubu** (Vieillot).

Aluco Fleming becomes **Tyto** Billberg (Synop. Faunae Scand., I, pars 2, 1828, tab. A; new name for *Strix* Savigny; type, *Strix alba* Scopoli), because *Aluco* Fleming 1822 is preoccupied by *Aluco* Link 1807; and because *Tyto* Billberg, not being invalidated by *Tyta* Billberg 1820, a word of different classical termination, is the earliest available name. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, p. 500.)

Oreospiza Ridgway becomes **Oberholseria** Richmond (Proc. Biol. Soc. Wash., XXVIII, Nov. 29, 1915, p. 180; type by original designation, *Fringilla chlorura* Audubon), because *Oreospiza* Ridgway 1896 is preoccupied by *Oreospiza* Keitel 1857, and *Oberholseria* is proposed in its place. (Cf. Richmond, loc. cit.) The only species is

592. 1. **Oberholseria chlorura** (Audubon).

Mniotiltidae becomes **Compsothlypidae**, because **Compsothlypis** Cabanis, not *Mniotilta* Vieillot, is the type genus of the family. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXII, April 11, 1919, p. 46.)

Helinaia Audubon becomes **Limnothlypis** Stone (Science, N. S., XL, No. 1018, July 3, 1914, p. 26; type by original designation and monotypy, *Sylvia swainsonii* Audubon), because the type of *Helinaia* Audubon is, by subsequent designation (Gray, List Gen. Birds, ed. 2, 1841, p. 33), *Motacilla vermicivora* Gmelin, which makes *Helinaia* a synonym of *Helmitheros* Rafinesque. (Cf. Stone, loc. cit.; and Rich-

mond, Proc. U. S. Nat. Mus., LIII, Aug. 16, 1917, p. 598.) The only species is

638. ***Limnothlypis swainsonii*** (Audubon).

Vermivora rubricapilla (Wilson) becomes ***Vermivora ruficapilla*** (Wilson) (*Sylvia ruficapilla* Wilson, Amer. Ornith., III, 1811, p. 120, pl. XXVII, fig. 3; near Nashville, Tenn.), because the latter is not preoccupied by *Sylvia ruficapilla* Latham 1790, since this is merely a nomenclatural combination—i. e., not an original description. (Cf. Cooke, 'The Auk,' XXIX, No. 4, Oct., 1912, p. 545.) The races of this species therefore become

645. ***Vermivora ruficapilla ruficapilla*** (Wilson).

645a. ***Vermivora ruficapilla gutturalis*** (Ridgway).

Compsothlypis americana usneae Brewster becomes ***Compsothlypis americana pusilla*** (Wilson), because *Sylvia pusilla* Latham (Suppl. Ind. Orn., 1801, p. 56), which supposedly preoccupied *Sylvia pusilla* Wilson (Amer. Ornith., IV, 1811, p. 71, pl. 28, fig. 3; eastern Pennsylvania), is only a nomenclatural combination, not an original description, and thus does not invalidate Wilson's name; and the latter, therefore, becomes available for the bird later described as *Compsothlypis americana usneae* Brewster. (Cf. Brewster, 'The Auk,' XXXV, No. 2, April, 1918, p. 228.)

Saxicola Bechstein becomes ***Oenanthe*** Vieillot (Analyse Nouv. Syst. Orn. Élément., 1816, p. 43; type by tautonymy, *Motacilla oenanthe* Linnaeus), because the type of *Saxicola* is, by subsequent designation, *Motacilla rubicola* Linnaeus, a number of the genus *Pratincola* Koch. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 20). The North American forms are:

765. ***Oenanthe oenanthe oenanthe*** (Linnaeus).

765a. ***Oenanthe oenanthe leucorhoa*** (Gmelin).

CHANGES OF NOMENCLATURE REJECTED.

Colymbus Linnaeus versus ***Podiceps*** Latham. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, pp. 494–495; Mathews and Iredale. Ibis, 1913, pp. 217–218.) Change rejected, because the earliest valid type designation of *Colymbus* Linnaeus is *Colymbus cristatus* Linnaeus, by the Committee of the American Ornithologists' Union (Check-List North Amer. Birds, 1886, p. 73). The designation of *Colymbus arcticus* Linnaeus by Gray (Cat. Gen. and Subgen. Birds, 1855, p. 125) must be regarded as ineffective, since it is specifically stated to refer to Linnaeus at 1735 ("1735 nec 1766"), and therefore cannot be used for the 1758 edition of the 'Systema Naturae.' (Cf. Hartert, Brit. Birds, IX, 1915, p. 55.)

Gavia Forster versus ***Colymbus*** Linnaeus. (Cf. Sclater, List Brit. Birds, ed. 2, 1915, pp. 398–399.) Change rejected, because by the

earliest tenable designation (Committee American Ornithologists' Union, Check-List North Amer. Birds, 1886, p. 73) the type of *Colymbus* Linnaeus is determined as *Colymbus cristatus* Linnaeus, and consequently this generic name must be continued in use for the grebes. (Cf. Hartert, Brit. Birds, IX, 1915, p. 55.)

Lunda Pallas versus **Ahea** [lege *Alea*] Boddaert. (Cf. Mathews, Austral-Asian Record, III, No. 2, Nov. 19, 1915, p. 37.) Change not accepted, because *Alea* is to be regarded as clearly a typographical error for *Alea*.

Pagophila alba (Gunnerus) versus **Pagophila eburnea** (Phipps). (Cf. Committee British Ornithologists' Union, List Brit. Birds, ed. 2, 1915, p. 394.) Change rejected, because the original description of *Larus albus* Gunnerus, in Leem's Beskr. Finm. Lapp, 1767, p. 285, is considered recognizably applicable to the Ivory Gull. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXII, Dec. 31, 1919, p. 199.)

Larus hyperboreus Gunnerus versus **Larus glaucus** Brünnich. (Cf. Hartert, Hand-List British Birds, 1912, p. 202.) Change rejected, because *Larus glaucus* Brünnich 1764 is rendered invalid by the prior *Larus glaucus* Pontoppidan 1763, which was applied to *Larus canus* Linnaeus.

Sterna caspia Pallas versus **Sterna tschegrava** Lepechin. (Cf. Hartert, Hand-List British Birds, 1912, p. 192.) Change rejected, because, while *Sterna tschegrava* is sufficiently described, and has anteriority over *Sterna caspia* Pallas, Lepechin is clearly non-binomial in the article (Nov. Com. Acad. Sci. Imp. Petrop., XIV, pt. 1, 1770, p. 500) in which *Sterna tschegrava* is described.

Daption Stephens versus **Petrella** Zimmermann. (Cf. Mathews, 'The Auk,' XXXI, No. 1, Jan., 1914, pp. 90-91.) Change rejected, because Zimmermann is not binomial in the publication in question (Bartram, Reisen Nord- und Sud-Karolina, 1793, p. 293), nor is he a binary author accepted by the International Zoological Commission.

Clangula Oken versus **Bucephala** Baird. (Cf. Hartert, British Birds, IX, No. 1, June 1, 1915, p. 7.) Change rejected, because *Bucephala* Baird 1858 is preoccupied by *Bucephalus* Baer 1827, a genus of Vermes. Furthermore, the proper name for the genus is *Glaucionetta* Stejneger (cf. *antea*, p. 442).

Clangula Oken versus **Glaucion** Kaup. (Cf. Committee British Ornithologists' Union, List Brit. Birds, 1915, p. 384.) Change rejected, because *Glaucion* Kaup 1829 is preoccupied by *Glaucion* Oken, 1816, a genus of Mollusca.

Erismatura Bonaparte versus **Oxyura** Bonaparte. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 9.) Change rejected, as *Oxyura* Bonaparte 1828 is considered preoccupied by *Oxyurus* Swainson 1827.

Erismatura Bonaparte versus **Cerconectes** Wagler. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 9.) Change rejected,

because, while *Cerconectes* possibly appeared before *Erismatura*, the exact dates of publication are still too indefinitely determinable.

Olor Wagler versus **Cygnus** Zimmermann. (Cf. Richmond, Proc. U. S. Nat. Mus., LIII, Aug. 16, 1917, p. 587.) Change rejected, since Zimmermann is here neither binomial nor an accepted binary author.

Himantopus Brisson versus **Hypsibates** Nitzsch. (Cf. Mathews, Novit. Zool., XVIII, No. 1, June 17, 1911, p. 7.) Change rejected, because Brisson's names are held to be valid.

Pisobia maculata (Vieillot) versus **Pisobia pectoralis** (Say). (Cf. Mathews, Birds Australia, III, pt. 3, Aug. 18, 1913, p. 261.) Change rejected, because *Tringa maculata* Vieillot is not preoccupied by "*Tringa maculata*" Linnaeus, since there is no such combination in the writings of Linnaeus. (Cf. Oberholser, 'The Auk,' XXXV, No. 1, January, 1918, p. 63.)

Tringa ocropus Linnaeus versus **Tringa ochropus** Linnaeus. (Cf. Hartert, British Birds, IX, No. 1, June 1, 1915, p. 9.) Change rejected, on the ground that *Tringa ocropus* cannot be considered a mere typographical error.

Arenaria Brisson versus **Morinella** Meyer and Wolf. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, p. 498.) Change rejected, because Brisson's names are held to be valid.

Chaemepelia Swainson versus **Columbina** Spix. (Cf. Allen, Science, N. S., XXXIII, 1911, pp. 336-337.) Change rejected, because the type of *Columbina* Spix was first designated (Gray, List Gen. Birds, 1841, p. 75) as *Columbina strepitans* Spix, which is generically distinct from the species of the genus currently called *Chaemepelia*. (Cf. Todd, Annals Carnegie Mus., VIII, 1913, p. 515.)

Falco aesalon Tunstall versus **Falco regulus** Pallas. (Cf. Hartert, Hand-List British Birds, 1912, p. 112.) Change rejected, because *Falco aesalon* Tunstall is not a nomen nudum, but a valid name, based on the "Merlin" of Pennant's 'British Zoology' and "l'Emerillon" of Brisson's 'Ornithologie.'

Aluco Fleming versus *Flammea* Fournel. (Cf. Mathews, Austral Avian Record, I, No. 4, Sept. 18, 1912, p. 104.) Change rejected, because the earlier *Tyto* Billberg is not preoccupied by *Tyta* Billberg, and is therefore the proper name for the Barn Owls.

Cryptoglaux Richmond versus **Aegolius** Kaup. (Cf. Hartert, Hand-List British Birds, 1912, p. 105.) Change rejected, on the ground that *Nyctala* Brehm, from whatever date taken, is preoccupied by *Nyctalus* Bowdich 1825; and that *Aegolius* Kaup 1829 is preoccupied by *Aegolia* Billberg 1820. The only tenable name for the genus is therefore *Cryptoglaux* Richmond.

Cryptoglaux funerea richardsoni (Bonaparte) versus **Cryptoglaux tengmalmi richardsoni** (Bonaparte). (Cf. Hartert, Hand-List British Birds, 1912, p. 105.) Change rejected, because *Strix funerea* Linnaeus refers undoubtedly to this species, notwithstanding the statement that it is of the size of a crow.

- Dryobates** Boie versus **Dendrocopos** Koch. (Cf. Hesse, Ornith. Monatsb., 1911, pp. 160-162.) Change rejected, because *Dendrocopos* Koch, July, 1816, is preoccupied by *Dendrocopus* Vieillot, April, 1816, and therefore the proper name for the present genus is *Dryobates* Boie.
- Loxia** Linnaeus versus **Crucirostra** Scopoli. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, pp. 501-502.) Change rejected, because the removal of *Loxia curvirostra* from *Loxia* as the monotypic type of **Crucirostra** Scopoli does not prevent the same species from later being designated as the type of *Loxia*. Furthermore, *Loxia curvirostra* is by tautonymy the type of *Loxia* Linnaeus.
- Passerina** Vieillot versus **Linaria** Bartram 1791 and Zimmermann 1793. (Cf. Mathews, 'The Auk,' XXXI, No. 1, Jan., 1914, pp. 88-90; Richmond, Proc. U. S. Nat. Mus., LIII, Aug. 16, 1917, p. 599.) Change rejected, because neither Bartram nor Zimmermann are either binomial or binary authors accepted by the International Zoological Commission.
- Piranga** Vieillot versus **Merula** Zimmermann. (Cf. Mathews, 'The Auk,' XXXI, No. 1, Jan., 1914, pp. 88, 90; Richmond, Proc. U. S. Nat. Mus., LIII, Aug. 16, 1917, p. 603.) Change rejected, on the ground that Zimmermann is here neither binomial nor a binary author accepted by the International Zoological Commission.
- Hirundo** Linnaeus versus **Chelidon** Forster. (Cf. Mathews, Novit. Zool., XVII, No. 3, Dec. 15, 1910, p. 501.) Change rejected, because Forster did not actually fix the type of *Hirundo* Linnaeus when proposing (Syn. Cat. Brit. Birds, 1817, p. 17) for *Hirundo rustica* Linnaeus the generic name *Chelidon*; wherefore Selby (Illustr. Brit. Ornith. (text), I, 1825, p. XXVIII) was the first to designate the type of *Hirundo* Linnaeus, and he selected *Hirundo rustica* Linnaeus.
- Bombycilla** Vieillot versus **Ampelis** Linnaeus. (Cf. Committee British Ornithologists' Union, List Brit. Birds, ed. 2, 1915, p. 362.) Change rejected, because the type of *Ampelis* Linnaeus is not determinable by tautonymy, since, in the 'Systema Naturae,' ed. 12, I, 1766, p. 297, the supposed synonym "Ampelis" is not used in the proper sense of "the Ampelis." Thus Gray's designation (List Gen. Birds, 1840, p. 34) of *Ampelis cotinga* Linnaeus becomes the first fixation of the type of *Ampelis*. Consequently *Bombycilla* is left as the earliest tenable name for the Waxwings.
- Dumetella** S. D. W. versus **Lucar** Bartram 1791 and Zimmermann 1793. (Cf. Mathews, 'The Auk,' XXXI, No. 1, Jan., 1914, pp. 88-91; Richmond, Proc. U. S. Nat. Mus., LIII, Aug. 16, 1917, p. 600.) Change rejected, because neither Bartram nor Zimmermann are either binomial or binary authors accepted by the International Zoological Commission.
- Regulus** Cuvier versus **Regillus** MacGillivray. (Cf. Richmond, Proc. U. S. Nat. Mus., LIII, 1917, p. 620; Mathews and Iredale, Austral

Avian Record, III, No. 5, 1917, p. 119.) Change rejected, because the authors of *Regulus* Bartram 1791 and *Regulus* Zimmermann 1793, which supposedly preoccupy *Regulus* Cuvier are neither binomial nor acceptedly binary.

Sialia Swainson versus **Rubecula** Zimmermann. (Cf. Mathews, 'The Auk,' XXXI, No. 1, Jan., 1914, pp. 89-90.) Change rejected, because Zimmermann is not binomial in the publication in question (Bartram, Reisen Nord- und Süd-Karolina, 1793, p. 287), nor is he a binary author accepted by the International Zoological Commission. Furthermore, *Rubecula* is not actually adopted as a generic name by Zimmermann, but simply cited as a polynomial synonym. The list of "Nomina Conservanda" proposed by the Committee of the British Ornithologists' Union (List Brit. Birds, ed. 2, 1915, p. 355) contains the following five names that affect the present status of the A. O. U. Check-List:

Turdus musicus Linnaeus versus **Turdus iliacus** Linnaeus.

Asio flammeus (Pontoppidan) versus **Asio accipitrinus** (Pallas).

Cryptoglaux Richmond versus **Nyctala** Brehm.

Anas platyrhyncha Linnaeus versus **Anas boschas** Linnaeus.

Pterodroma Bonaparte versus **Oestrelata** Bonaparte.

These changes are not acceptable under the law of priority.

GENERAL NOTES.

Notes on the Black-crowned Night Heron in Western New York.

According to all published accounts the Black-crowned Night Heron (*Nycticorax n. naevius*) seems to be rare in western New York. The 'Auburn List' 1874 records but a single specimen taken on Seneca River, no date given. Eaton, 'Birds of New York,' records it as a transient visitant, uncommon in the counties of Cayuga, Monroe and Ontario, occasional in Seneca, fairly common in Onondaga and with no record for Yates. And the only breeding record is for Erie County.

My first record for this bird was May 7, 1911, when I saw a single individual perched in a tree along the inlet of Keuka Lake at Branchport.

June 17, 1914, in company with Dr. G. S. Britten and Dr. George D. Lynch, of Syracuse, I visited a breeding colony of Black-crowned Night Herons in a small swamp at Lakeside, Onondaga Lake. There were about 75 nests in the herony, about 50 of the Night Heron and 25 of the Green Heron. They were all intermingled, with sometimes nests of both species in the same tree, and some nests were as low as six or eight feet from the water. At this time a few of the nests contained eggs and the others held young of various sizes from newly hatched to about one-half grown. This

herony was discovered May 15, 1914, by Miss Nettie M. Sadler, of Syracuse, a teacher of biology and an enthusiastic bird student.

In 1915 Miss Sadler saw the Night Herons several times but they did not nest at Lakeside. In 1916, however, she found them nesting in a swampy wood across the outlet of Onondaga Lake and east of the Oswego canal.

July 21, 1914, 10 P. M., I heard Night Herons "quawking" as they flew around over the streets of Branchport. They seemed to be flying in circles and working to the west, then again in the evening of July 25 a single Night Heron was seen at Branchport by Miss Sadler. April 23, 1916, two Night Herons were seen by Mr. C. F. Stone and myself. They were perched in a tree along the inlet.

My last record for these birds was in the evening of June 18, 1919, when I saw and heard one flying over the streets of Branchport.—VERDI BURTON, *Branchport, N. Y.*

Bittern Displaying Its White Nuptial Plumes.—On May 21, 1920, when motoring with my friend, Dr. Lyman F. Bigelow, of Norwood, Mass., we visited a swamp of moderate extent within the town of Westwood, set as a bowl in the midst of woodland and surrounded on three sides by the wooded land on slopes rising well above the level of the swamp, which for the most part was bush-grown and not much open to view. But on the fourth side, where a town road runs beside it, it lay fully open. We had made the circuit of this swamp on foot, observing and enjoying the singing land birds, and were returning on the road to our car when our eyes, turned toward the swamp lying unobstructed before us, observed two pure white patches, not stationary, but moving slowly along among the bushes at the edge of the swamp. Our glasses at once revealed the form of a Bittern (*Botaurus lentiginosus*) carrying these most conspicuous patches of white at each shoulder, as large as a man's hand but not as long perhaps, being essentially round in form. Occasionally during our observation of the bird, which was continued for twenty minutes or more, these white feathers were raised as a ruff standing out from the natural contour of the bird; at other times they appeared to be more nearly even with the other feathers. These ruffs almost met across the back, but a narrow strip of brown feathers of the back was seen to separate them. To our eyes these ruffs were *pure white*. This conspicuous display of these large white patches was maintained without variation while we remained—different positions which the bird assumed did not materially change them. This Bittern occasionally 'pumped' and occasionally moved at a more rapid pace than the usual slow dignified walk, and at times strutted with the head carried forward. The erect stakelike position was also at times assumed, more especially when we first viewed the bird and it appeared that he was taking notice of our forms on the highway. If he did discern us, it had no effect to dissuade him from

his desire to display himself, for at no time did he withdraw the white ruffs into concealment. Several times for an instant a second Bittern, presumably the female, appeared in view, but only to become hidden at once behind one of the clumps of bushes. On the other hand, the male bird made no use of the bushes to screen himself. The distance travelled by this male bird during our observation was but a few rods, for he moved first in one direction and then in the opposite, first towards us and then away from us, and was only slightly further removed from us when we proceeded on our way, than when we first saw him. Our position had been about a hundred yards distant.

Mr. William Brewster's very interesting detailed description¹ of the display of these white nuptial plumes as witnessed by him and friends in the Great Meadows in Concord in April, 1910, then for the first time observed by him, presents the exhibition quite as we ten years later were fortunate enough to observe it in this Westwood swamp.—HORACE W. WRIGHT, 107 Pinckney St., Boston, Mass.

The Knot in Montana.—On October 4, 1915, I found the mummified body of a Knot (*Tringa canutus*) on Woody Island in Lake Bowdoin, Montana (nine miles east of Malta), among remains of a large number of shorebirds and other species that had perished from disease. From the appearance of these bodies it appeared that the birds had died near the end of August or during the early part of September of that same year. All were lying on a muddy shore just above the water line, apparently where they had dragged themselves out of the water after becoming sick. Like the other specimens examined the Knot was not in suitable condition for preservation as a skin, and so was prepared as a skeleton. It is now in the osteological collections of the U. S. National Museum. This is apparently the first published record of the Knot in Montana.—ALEXANDER WETMORE, *Biological Survey, Washington, D. C.*

Tringa Auct. versus Calidris Anon.—It has been conclusively shown by Mr. G. M. Mathews (Novit. Zool., XVIII, No. 1, June 17, 1911, pp. 5-6) that the generic name *Tringa* Linnaeus must be transferred to the group commonly called *Helodromas* Kaup. This leaves the Knot, *Tringa canutus* Linnaeus, without a generic name, and Mr. Mathews proposes the use of *Canutus* Brehm (Naturg. Vög. Deutschl., 1831, p. 653; type, *Tringa canutus* Linnaeus). Dr. C. W. Richmond has called attention (Proc. U. S. Nat. Mus., LIII, August 16, 1917, pp. 581-582) to a still earlier publication of this name by an anonymous reviewer of Bechstein's Ornithologische Taschenbuch. This name, however, must give way to *Calidris* of the same anonymous reviewer (Allg. Lit.-Zeitung, 1804, II, No. 168, June 8, 1804, col. 542), which has anteriority over *Canutus* and which was introduced as follows:

¹ 'Auk,' XXVIII, Jan. 1911. Pp. 90-100.

"Knüssel, *Calidris*.

Schnabel walzenförmig, gegen die Spitze hin dicker, glatt. Mittlere und äussere Zehe etwas verbunden.

Tringa calidris, *arenaria* u. a."

The *Tringa calidris* here mentioned should by tautonymy be considered the type of *Calidris* [Anonymous], although the other species mentioned, [*Tringa*] *arenaria*, has as a synonym the same specific name *calidris* (= *Charadrius calidris* Linnaeus, Syst. Nat., ed. 12, I, 1766, p. 255). In such cases of tautonymy it seems by all means more logical to consider as the type the species the cited name of which is the same as the generic name proposed, rather than the species having the same name as a synonym.

The type of *Calidris* Anonymous being thus settled as *Tringa calidris*, it remains to determine the identity of this *Tringa calidris*. It is, of course, the *Tringa calidris* of Bechstein (Ornith. Taschenb. Deutschl., 1803, p. 308), which is in turn the *Tringa calidris* of Linnaeus, (*i. e.*, Gmelin) since Bechstein quotes "*T[ringa] calidris* Linn." and "Linné, l. c., p. 681, N. 19," which latter, of course, refers only to Gmelin. But *Tringa calidris* Linnaeus (Syst. Nat., ed. 12, I, 1766, p. 252) and *Tringa calidris* Gmelin (Syst. Nat. I, ii, 1789, p. 681) are, anyway, one and the same; and as is unmistakably shown by the diagnoses of both and by the descriptions given by the authors on which both are based, they both clearly refer to the Knot, *Tringa canutus* Linnaeus; not to the Redshank, *Totanus totanus* (Linnaeus), as intimated by Mathews and Iredale (Austral Avian Record, III, No. 5, December 26, 1917, p. 114). This unexpected development makes it necessary to use the generic name *Calidris* Anonymous for the Knot, which will, therefore, now stand as

***Calidris canutus* (Linnaeus.)**

This use of the generic name *Calidris*, of course, precludes its employment for the Sanderling just as effectively as though it were to be employed for the Red-shank. Consequently the substitution of the generic name *Crocethia* Billberg for the Sanderling, made by Messrs. Mathews and Iredale (Austral. Avian Record, III, No. 5, December 26, 1917, p. 114), remains valid, even though they misidentified the *Tringa calidris* on which *Calidris* Anonymous is based.—HARRY C. OBERHOLSER, *Washington, D. C.*

Early Virginia Rail in New York.—On March 13, 1920, Mr. William Gee, of Stony Point, N. Y., picked up a Virginia Rail at Bear Mountain, near Stony Point. The bird evidently had been killed by flying into telegraph wires. It was sent to me for identification by Mr. Fred E. Sleight, Principal of the Stony Point High School, and the record seems unusual enough to be reported to 'The Auk.'—LEE S. CRANDALL, *N. Y. Zoological Park.*

Least Flycatcher in Michigan in April.—April 4, 1920, weather cool, and many patches of snow still on the ground, Dr. Christofferson and myself, while on a bird jaunt much to our surprise discovered a Least Flycatcher. How the bird arrived here at such an early date is a mystery, as it should not have been much north of the latitude of Washington. This was just at the time of the severe storms accompanied by tornadoes that swept the country to the south of us, and it is possible that the bird was swept up and carried to this northern point in that way.

The earliest date I can find for the Least Flycatcher is April 23, at Petersburg.—M. J. MAGEE, *Sault Ste. Marie, Michigan*.

A New Name for *Anairetes* Reichenbach.—The generic name *Anairetes* Reichenbach (*Avium* Syst., 1850, pl. LXVI), or as it is often written, *Anaeretes*, is in common use for a group of South American Tyrannidae. It is, however, unfortunately preoccupied by *Anaeretes* Dejean (*Catal. Col.*, 3rd ed., 1837, p. 181) and, therefore, needs to be replaced. It may be called *Spizitornis* (σπιζιττης, parus; ὄρνις, avis), nom. nov., with *Muscicapa parulus* Kittlitz as its type.

The species of this genus are as follows:

Spizitornis parulus parulus (Kittlitz).

Spizitornis parulus aequatorialis (Berlepsch and Taczanowski).

Spizitornis fernandezianus (Philippi).

Spizitornis regutoides (d'Orbigny and Lafresnaye).

Spizitornis nigricristatus (Taczanowski).

Spizitornis flavirostris (Selater and Salvin).

Spizitornis agilis (Selater).—HARRY C. OBERHOLSER, *Washington, D. C.*

A Raven Pellet.—In January of this year I picked up in a field at Santa Cruz Island, California, a pellet presumably ejected by a Raven (*Corvus corax sinuatus*). The pellet was three inches long with a diameter of one inch. It was examined by Mr. H. C. Bryant, of the California Fish and Game Commission, who writes: "Without pulling the pellet to pieces I discovered the following elements; parts of two Camel Crickets (*Stenopelmatus* sp.); parts of grasshoppers; 20 seeds of Poison Oak (*Rhus diversatola*); hulls of Wild Oats (*Avena fatua*)."

Mr. H. Harris, of Kansas City, Mo., who has kindly looked through the literature for me for mention of Raven pellets, writes that the only reference he has been able to find is in Vol. II of the fourth edition of Yarrell's 'British Birds,' edited by Alfred Newton, where, on page 260, it is stated: "A pair of Ravens known for many years to the Editor lived almost exclusively on moles, as he had ample facility for determining from repeated examination of the pellets of bone and hair which they, like so many other carnivorous birds, cast up." Mr. W. L. MacAtee tells me that there are no Raven pellets in the collection of the U. S. Department of Agriculture.

It may be that when the birds feed on refuse or carrion that there is not enough binding material to hold the pellets together for any length of time. Will not some one who lives in Raven territory collect more data?—RALPH HOFFMANN, *Santa Barbara, California.*

The Purple Grackle at Albany, Georgia.—During the week of April 14 to 22, I was very much interested in observing two pair of Purple Grackles feeding in the residence section of Albany, Ga., within one block of the business district. The four birds frequented this locality only, so far as I was able to learn, during that time and were observed and commented on by a number of people. They were remarkably tame and fed on the lawns within five feet of parties in conversation. Both pairs, so far as I could judge, were in full plumage and attracted considerable attention. The locality on which they fed during the entire week did not cover more than two city blocks. We never note these birds in the cities, through this section, which caused my interest.—PETER A. BRANNON, *Department of Archives, Montgomery, Ala.*

Note on the Generic Names *Schiffornis Bonaparte* and *Scotothorus Oberholser*.—The generic name *Schiffornis* was first proposed by Bonaparte (*Ateneo Italiano*, II, No. 11, August, 1854, p. 314) as follows:

"34. *Schiffornis*, Bp.—74. *major*, Bp.—75. *turdina* Wied.—76. *minor* Schiff."

As Dr. C. E. Hellmayr has already indicated (*Genera Avium*, IX, 1910, p. 24), two of the three specific names originally included—*major* Bonaparte and *minor* Schiff—were at that time nomina nuda. The third, "*turdina* Wied," is readily identifiable as *Muscicapa turdina* Wied (*Beitr. Naturg. Brasil*, III, Abt. 2, 1831, p. 817), which is the type of the genus *Scotothorus* Oberholser (*Proc. Acad. Nat. Sci. Phila.*, 1899, p. 208). Dr. Hellmayr concludes that the name *Schiffornis* as used by Bonaparte in the publication above cited is a nomen nudum, because "two of the three species mentioned (*S. major* and *S. minor*) were undescribed at that time, while the third (*S. turdina*) belongs to *Scotothorus*." It seems clear, however, that this disposition of the name is not the correct one, while the two species, *S. major* and *S. minor*, being then undescribed, are, of course, not to be considered, the third, *S. turdina* Wied, which is perfectly tenable, becomes, by virtual monotypy, the type of *Schiffornis* Bonaparte. Since, furthermore, the name *Schiffornis* Bonaparte is long anterior to *Scotothorus* Oberholser and has the same species for its type, it must take the place of the latter, and the species and subspecies of that genus stand as follows:

Schiffornis turdinus turdinus (Wied).

Schiffornis turdinus wallacii (Selater and Salvin).

Schiffornis turdinus olivaceus (Ridgway).

Schiffornis turdinus amazonus (Selater).

Schiffornis turdinus rosenbergi (Hartert).

Schiffornis turdinus furvus (Ridgway).

Schiffornis turdinus veraepacis (Selater and Salvin).

Schiffornis turdinus stenorhynchus (Selater and Salvin).

Schiffornis unicolor (Bonaparte).

Schiffornis pallescens (Lafresnaye).

Schiffornis sulphureiventer (Hellmayr).

Schiffornis chrysocephalus (Pelzeln).

This disposition of the generic name *Schiffornis* leaves the group formerly called by this name without a generic designation, and we, therefore, propose to call it *Massornis* (μάσσων, major, ἄρνις, avis), nom. nov., and designate as the type species *Schiffornis major* Des Murs. This, the only species of the genus, will consequently be known as *Massornis major* (Des Murs).—HARRY C. OBERHOLSER, *Washington, D. C.*

Evening Grosbeak (*Hesperiphona v. vespertina*) in Minnesota in Mid-summer.—On July 28, 1900, on a bright and beautiful sunny day, between the hours of 12 and 1, while the family was seated at the dinner table, I was startled by a flock of at least five or six Evening Grosbeaks, which lit in a medium-sized Box-Elder tree near my home in Aitkin. I was so astonished that in our eagerness to see the birds both Mrs. Lano and I rushed to the open door to get a glimpse of them. They evidently heard us, for they were alarmed and flew away before we could see any of them. The distance between the tree and the dinner table was less than twenty-five feet and since there was also an open window beside the door on the same side of the house as the tree, their call notes could be heard very distinctly. They were very restless and called loudly, more so than I had ever heard them during winter seasons. Of their identity I was positive beyond the slightest shade of doubt, for I had observed the species for more than 15 years during their winter visits to the state.

Again I take the following from my notes: Aug. 4, 1903, while on my way from my home to my place of business at 7:30 A. M., I saw two Evening Grosbeaks flying over in a northwesterly direction. Both were uttering their familiar plaintive notes which can not possibly be mistaken for any other North American species.

My latest spring date is May 19, 1901, when a small flock was observed in town. But these, no doubt, were belated migrants on their way north to their summer home. If Evening Grosbeaks do not nest in Aitkin County, what were these birds doing there in mid-summer? If only an individual had been observed on one or two occasions it would be considered accidental. I am certain that some future day some ornithologist living in Aitkin County or even farther north, who will have more time at his disposal, will discover the species nesting, if not regularly, at least occasionally.—ALBERT LANO, *Fayetteville, Arkansas.*

Evening Grosbeaks Common at Lakewood, New Jersey.—It may be recalled that Evening Grosbeaks (*Hesperiphona vespertina vespertina*) have twice been recorded in 'The Auk' from Lakewood, New Jersey, as rarities. During the winter of 1919-20 they occurred frequently throughout my stay in the town, from February 11 to April 24; and there were a good many of them. On April 15, 1920, I counted eighteen in two maples on Lexington Avenue, near Main Street.

Has this garrulous bird often been heard to sing at the time of its eastern visits? I have never heard it sing, though I have met with it on many occasions in northern New England up to the middle of May.—NATHAN CLIFFORD BROWN, *Portland, Maine*.

Evening Grosbeaks at Princeton, New Jersey.—A flock of four Evening Grosbeaks (*Hesperiphona v. vespertina*), consisting of one male and three females, were recent visitors in the town of Princeton for several weeks. They were first observed by Mrs. Alfred T. Baker on February 16. They were positively identified by Prof. Alexander H. Phillips—well known as an ornithologist—feeding on the seed spread for birds at his own residence, on March 1; and by me on March 2, and were last seen by Prof. Phillips on March 13, the number having increased to eight—all females.

So far as I am aware this is the first record of these birds in the immediate locality.—HENRY LANE ENO, *Princeton, N. J.*

The Newfoundland Crossbill in the Washington Region.—A Red Crossbill secured at Four-Mile Run, Virginia, opposite the city of Washington, D. C., on November 30, 1919, proves to be an individual referable to the subspecies recently described from Newfoundland (*Loxia curvirostra percna* Bent). On first examination some doubt arose as to the identity of this bird as the skins of *percna* available were all in summer plumage. Mr. A. C. Bent, who has kindly examined the specimen in question and compared it with other fall and winter examples of the Newfoundland bird in his possession, informs me that it is undoubtedly a specimen of *percna*.¹ The bird is a male in plain plumage with little red evident on the feathers. It is noticeably dark in color and is of large size, being within the limits of variation given for *percna*. Measurements are as follows, wing 93 mm., tail 56 mm., and culmen 18.1 mm. It is probable that study of the series of Red Crossbills taken a number of years ago by various collectors in this region may reveal other specimens representing the Newfoundland race.—ALEXANDER WETMORE, *Biological Survey, Washington, D. C.*

¹ See 'Auk,' 1920, p. 298.

White-winged Crossbill (*Loxia leucoptera*) in West Virginia.—The following notes on the recent occurrence of this species at French Creek, Adrian and Buckhannon, all in Upshur County, West Virginia, have been sent to me by competent observers. These records are as follows, and constitute the first reliable data in regard to the presence of the White-winged Crossbill in West Virginia:

"I saw the Crossbills at French Creek, W. Va., on the afternoon of January 22, 1920, and the two days following. January 22 was a cold day with a heavy sleet. I walked to the village, and, as soon as I came in sight of the hemlocks, noticed the birds in the trees and on the ground beneath. A nearer view revealed them as strangers, and I at once noticed their remarkable tameness. One finely colored male was working busily at a cone on a branch a foot above my head, and I stroked his side with the tip of my umbrella. Instead of flying he edged away, threw his head to one side and scolded me softly for interrupting his feast. There must have been thirty or forty of the birds present and I looked and puzzled until I was tired. I did not catch a sight of the crossed beak and could not think what they were. An hour later I returned and found the birds still there. A little group of three females were sitting in the road eating from a cone, and I approached them and picked one up in my hand. Then I saw the beak and recognized the birds, I carried the specimen home with me, made sure of the identification, then took it out on the porch and opened my hand. The bird flew about two feet and alighted on a vine. I think I might have picked it up again without any difficulty.

"Another flock appeared at the same time around the hemlocks near Adrian. I think I heard of a dozen being caught in the hand. Three or four days thereafter all disappeared and have not been seen since."

The next note was written in reference to a flock of White-winged Crossbills observed at Buckhannon, W. Va., the same day. It is as follows:

"On January 22, when passing by a large hemlock tree that stands well down on Kanawha Street, in Buckhannon, my attention was attracted to unfamiliar bird notes. I stopped and found that the birds making the notes were in the hemlock tree and on the ground under it. Just as I looked several of them flew down and began picking at the cones. I walked up closer to get a good look and found that they were very tame. There was a full-plumaged male very close and, by practising a little Indian stealth, I was able to place my hand over it. It kept prying at the cone scales all the time I was approaching, and only a few times looked up. I saw two or three males and perhaps five or six females or immature birds. The day was stormy and the birds acted as if they were very hungry."—EARLE A. BROOKS, *Everett, Massachusetts*.

An Erroneous Kansas Record for Baird's Sparrow.—In the *Oölogist* for 1907,¹ Mr. Logan Evans has recorded Baird's Sparrow (*Ammo-*

¹ Vol. XXIV, Aug., 1907, p. 124.

dramus bairdi) as breeding near Wilsey, Kansas, on the basis of a set of eggs taken with two specimens of the bird. At the time this note was published, I wrote from the University of Kansas at Lawrence requesting that the specimens be forwarded for examination. Mr. Evans responded promptly to this request, and on receiving the skins, I found that they were not Baird's Sparrow, but instead were Henslow's Sparrow (*Passerherbulus henslowi*). The bird was unknown to Mr. Evans and his note was made on the basis of the eggs which he forwarded to a dealer for identification. Although Baird's Sparrow probably passes through western Kansas during migration there is no record known of this species for the State. I have made careful search for it at a number of localities in the eastern part of the State (a search that has entailed a considerable mortality among obscurely marked individuals of LeConte's Sparrow, a species that abounds in migration) but as yet have failed to find it.—ALEXANDER WETMORE, *Biological Survey, Washington, D. C.*

A Scarlet Tanager at Thirty-fourth Street, New York.—On May 22, 1899, I took lodgings at 30 West Thirty-fourth Street, New York City, for a stay of three days; and on one of these days, as I sat at a south window, looking out over nearby yards into a solitary, rather large deciduous tree, I caught sight of a Scarlet Tanager (*Piranga erythromelas*) descending from a great height in a northeasterly direction. A moment or two later he had alighted in the tree before me.

I do not remember what next happened to this bird, but I believe that he had disappeared when I returned to the window after a short absence. It may be assumed, I think, that he was migrating and, since he was making his journey so late in the month and did not go a few blocks farther to one of the parks before alighting, that he was an example of the laggards, more or less subnormal, which are always to be found at migration time.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

Bohemian Waxwing at Seattle, Washington, During the Winter of 1919-20.—After the remarkable invasion of this region in the winter of 1916-17 by the Bohemian Waxwing (*Bombycilla garrula*), it was hardly to be expected that another might soon occur, but during the past winter 1919-20, this locality has again been visited by this attractive bird, although by comparison the number of individuals was not nearly as great as in the preceding flight of three years ago.

The first report given us of their occurrence came from Mr. C. J. Albrecht, of this city, who noted a small flock November 25, about twelve miles east of the city and from that date the birds began to be seen in flocks of varying sizes, these increasing in numbers until about the middle of December when the maximum appeared to be reached, and it is also at this time and during a few subsequent weeks that the largest flocks were seen, we on two occasions observing one aggregating fully two thousand individuals.

We had many opportunities to watch these beautiful birds and observe their actions, so quote our notes made at the time:

"December 22—The weather the past week has been lowery with frequent rains and a temperature at times as high as 52 degrees. This morning we heard the Bohemians and found them in the same locality where we had previously seen flocks on two other occasions. The flock was a large one, a majority of the birds being perched in or near the top of a large maple tree, all headed directly into the wind which seems to be customary when any appreciable wind is blowing, from which individuals were constantly dropping down to feed on the berries in some adjacent mountain ash trees. As usual there was a constant movement in the flock, birds continually leaving it and returning and judging from the sound the greater number were uttering their soft rolling notes that are so pleasing to the ear.

"A striking and very noticeable thing about a flock is, when disturbed nearly all the birds will take wing and circle around a number of times until they come together in a close and compact body, then it appears as if at the same instant all were impelled by the same impulse to alight and the flock will sail up to the chosen spot on stiffly extended wings, this action on the part of each individual bird being uniform and so marked as to almost stamp their identity, and during these various evolutions the soft lisping notes of the birds are always much in evidence.

"December 25—We again watched the waxwings in the same locality as heretofore, it certainly is a favorite spot with them. For a long time our observations continued and we saw a repetition of the actions already noted, but among the birds in this flock were a few Cedar Waxwings, some California Purple Finches and the ever-present Western Robin, and these latter resented the intrusion of the Bohemians for they would frequently make a dash at the feeding birds and attempt to drive them away. This was futile for the Bohemians would simply shift their positions from wherever they might happen to be and resume feeding. During this time there was considerable noise made by all the birds which evidently had a reflex action on some few Shufeldt's Juncos and Oregon Chickadees in the neighborhood, for these quickly came over and joined the flock, making it quite a heterogeneous one.

"Among the Bohemians were many that evidently had eaten their full of the berries and these would quietly sit in the top of a large tree nearby and preen themselves, but from time to time some one of the birds with the same action as a flycatcher would fly from its perch after a passing insect, being at times successful, for on one occasion we were close enough to see the bird catch a large-sized light-colored moth. As these actions on the part of the birds were frequent there must have been numbers of the insects in the air.

"December 29—Early this morning saw a flock of the Bohemians alight in a large tree in the locality before mentioned, and as we watched

the birds several other flocks of varying numbers also appeared and joined the first, thus making a large one of nearly two thousand individuals, this estimate being based on as careful a count as could be made. The majority of the birds occupied the tops of three trees adjacent to each other from which many flew to small mountain ash trees close by to feed upon the berries, the remainder of the flock being perched on the telephone wires in the vicinity. There was a continual 'milling' going on in the flock, the individuals being constantly in motion, this activity being accompanied by their lisping notes.

"Near the base of the largest of the trees grew a tall decorative rose bush close to the edge of a retaining wall at the side of the street walk. This wall was about five feet in height, and as the bush had many hips numbers of the birds attempted to alight therein to feed, but its branches being too weak to sustain them would continually give way, and this in turn caused a constant commotion, for it kept the birds fluttering and interfering with each other and also dislodged many hips which fell to the walk beneath to be eaten by the birds alighting thereon.

"The appearance of this proceeding reminded one of a swarm of bees and the feeding birds were so engrossed as to be almost oblivious of our presence as we stood within a few feet of them.

"Several times the flock took wing and circled above the trees, then returned to scatter about—some in the bushes, some on the phone wires, but the greater number gathered in the tops of the trees and no matter how engaged or whether or not on the wing they did not cease their notes. Finally being disturbed all arose in a body, made a wide swing or two and breaking up into several small flocks left the locality."

Flocks of Bohemian Waxwings continued to be seen in this vicinity during January and the early part of February, after which their numbers rapidly diminished and they were less frequently seen. Our last record is March 1, when a few birds were noted by Mr. C. J. Albrecht in the northern part of the city.

The species was also well distributed throughout this region, for we have records of its appearance from as far to the north as Prevost, on one of the San Juan group of islands north of the eastern extremity of the Strait, this being given us by Mr. D. E. Brown, of Seattle, to as far south as Olympia, and it is a fair assumption that the movement must have been of quite wide extent.—S. F. RATHBUN, *Seattle, Wash.*

Bohemian Waxwing at Salem, Mo.—January 1, 1918, a bunch of about ten of these birds were seen in an apple tree near my home, in Salem, feeding on the withered apples still on the tree. They were very tame and unsuspicious, and one could come within ten feet of them as they fed, without disturbing them. Their lisping notes and their method of flight were like the Cedar Waxwing. They were, however, appreciably larger; the black stripe along the eye, the black spot on the throat, the

white and yellow on each wing, and the broader band of yellow on the tail were clearly seen. The general body color seemed grayer than the Cedar Waxwing. One bird was also seen January 2 near the same place. PAUL DENT AND DENT JOHERST, *St. Louis, Mo.*

Bohemian Waxwing (*Bombycilla garrula*) at Rochester, N. Y. A flock of 65 of these birds was first seen on February 28, 1920, by Mr. Horsey, who then called Mr. Edson and both of us then studied them until we saw clearly all the points which separate them from the Cedar Waxwing (*Bombycilla cedrorum*). We were able to observe the chestnut rufous under-tail coverts, white and yellow on wings, larger size and grayer coloration. The notes, too, are very distinctive, being much louder, and could perhaps be described as a lisped whistle. The flock remained intact for four days and from 65 to 2 were seen every day until March 9. But 2 to 35 birds were noted several days afterwards until March 26, when five birds were seen. They were here 18 days in all.—W. L. G. EDSON AND R. E. HORSEY, *The Herbarium, Highland Park, Reservoir Ave., Rochester, N. Y.*

Bohemian Waxwings, at Rochester, N. Y.—March 3 was the first day that I had an opportunity to study the waxwings recorded above by Messrs. Edson and Horsey. Thirty of them were in the same crabapple tree in which they were first seen feeding on the fruit. Only eight or ten being in the tree at one time, the others were in the top of a nearby elm. As soon as one would get two or three berries in its crop it would fly to the elm while another bird would fly to the vacated place in the crabapple. As they flew past, some within four feet, their flight seemed to be slightly swifter than the Cedar bird's. I was able to approach within eight feet of the birds without having them show any signs of alarm, but if I moved slowly forward they would watch me carefully, only those on the opposite side of the bush feeding, until I was about six feet from the nearest bird. Then he would leap into the air and fly to the elm to be quickly followed by the others. At this close distance the distinguishing marks were very readily observed. It was very apparent that the birds were larger than the common waxwings and seemed to be nearer two than one inch longer. The body coloration was lighter than in the Cedar bird and the black throat showed much more plainly. The other identification marks such as the chestnut under tail-coverts and the yellow on the tip and lower margin of the primaries and the white on the tips of the secondaries were very clearly seen. The notes, which were to be heard continually, were much louder than those of the Cedar Waxwing and were more like a trill than a lisp.

The next opportunity I had to observe the birds was March 5. Twenty-three individuals were at the same place but five was the largest number seen in the crab-apple at one time.

On March 6 twenty birds were seen in the elm but none were in the crab-apple. Probably they had finished eating, as I did not see the birds until 8:45 A. M. They always fed in the early morning and left the park about nine o'clock.

Only two birds were seen in the elm on March 9.

Then the weather grew warm and the Waxwings were not seen for a day or two and we thought they had gone north. They appeared again, however, and my next date is March 18. A flock of thirty-five was found feeding on a species of crab-apple in a different part of the park, the other bush having been stripped practically clean of the fruit.

On March 23 I found fifteen of the birds feeding at the second place.

March 26, the last day they were seen here, five Bohemians were feeding on this crab-apple in company with three Cedarbirds. The differences were very plain and I fail to see how any one can confuse the two.—RICHARD M. CHASE, *Rochester, N. Y.*

Autumnal Stay of the Parula Warbler in Maine.—The evidence at hand led to the statement¹ in 1882 that the Northern Parula Warbler (*Compsothlypis americana usneæ*) left Portland, Maine, and its vicinity early in September; but observations of subsequent years have shown that it remains up to the very end of the month, at times, some of the males singing in a subdued manner to the last. Possibly stragglers tarry much later, for on October 26, 1914, I came upon a cat at the west end of Portland, which held in its mouth a dead Parula. I could not get possession of the bird, but, as the cat mouthed and played with it, I could see that its neck and feet were free from stiffness and that its plumage was unmatted and clean, suggesting that it had just been killed.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Blue-winged Warbler (*Vermivora pinus*) on the Coast of South Carolina.—On April 30, 1920, I heard the song of a warbler that was new to me, and as the beginning of the song closely resembled that of Bachman's Warbler (*Vermivora bachmani*) I at once tried to locate the singer. This bird was in a ravine of second growth and was so restless that 20 minutes elapsed before I could see it plainly, when I identified it as a male in very high plumage, the yellow of the under parts being very brilliant. The character of the place was so dense that at no time could I get a shot at it, and the bird ceased singing and finally disappeared. The only other previous record for South Carolina is a specimen taken by Mr. Leverett Mills Loomis at Chester on April 30, 1887 ('Auk,' VIII, 1891, 169).—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

¹ Proc. Port. Society Nat. Hist., 1882, p. 7.

Hooded Warbler (*Wilsonia citrina*) at Detroit, Michigan.—On May 6, 1920, I saw an adult male of the Hooded Warbler (*Wilsonia citrina*) at Belle Isle, the island park of Detroit. The bird was seen within a distance of ten feet in low bushes, and carefully watched for some little time. From long familiarity with the species at Washington, D. C., the identification is beyond question. I have never been able to add this species to the list of Birds of southeastern Michigan, although I have a record of a male seen by myself, September 19, 1903, also at Belle Isle, a record that in after years I have held open to question. The nearest record adjacent to this region is that of a young female secured in the fall of 1880 at Ypsilanti, Washtenaw County, by Dr. Van Fossen, which is in the collection of the Museum of Zoology, University of Michigan.—BRADSHAW H. SWALES, U. S. National Museum, Washington, D. C.

***Penthestes hudsonicus hudsonicus* in North Dakota.**—An interesting new bird for North Dakota is reported by Mr. Alfred H. Eastgate, of Bottineau, North Dakota, to whom the writer is indebted for the privilege of placing it on permanent record. While working near Upsilon Lake, west of St. John, in the Turtle Mountains, North Dakota, on November 13, 1919, Mr. Eastgate noted two or three strange Chickadees, but could not approach them closely enough to be sure of their identity. Later in the same day one was found dead, and it proved to be the Hudsonian Chickadee, *Penthestes hudsonicus hudsonicus*.—HARRY C. OBERHOLSER, Washington, D. C.

Labrador Brown-cap Chickadee (*Penthestes hudsonicus nigricans*) at Rochester, Monroe County, New York.—Two birds individuals of this subspecies were observed by the undersigned on November 6, 1919. They were identified by the much darker mouse-colored cap than that of the Acadian Chickadee (*Penthestes hudsonicus littoralis*) with which we became very well acquainted in the winter of 1913-1914. Another point which seems characteristic is the activity of the Labrador as compared with the rather logy action of the Acadian, the latter bird could almost be picked off from a tree, while the Labrador seems even more active than our common Black-cap Chickadee (*Penthestes atricapillus*). The notes, too, are different from either of the others. This bird uses only three notes at a time, thus "Chicka dee dee," and they are pitched higher than those of the Acadian. Except on November 6 and 8, 1919, only one bird was seen at a time. From December 20, 1919, on to the time he left on March 30, 1920, he came to the Herbarium feeding station for suet. As this suet is packed into holes bored in a stick and the stick is hung on the window casing we were able to watch the bird at very close quarters by merely looking through the window. He was observed on 98 days during his stay with us.—W. L. G. EDSON AND R. E. HORSEY, Highland Park, Rochester, N. Y.

Blue-gray Gnatcatcher in the Boston Public Garden.—On May 18, 1920, in the largest flight of migrant birds which has visited the Public Garden this season, came a Blue-gray Gnatcatcher (*Poliophtila caerulea caerulea*). The bird, a male, all at once appeared in a moderate-sized English elm at the Arlington Street side of the grounds near Beacon Street before two fellow observers, Mrs. Calvert Cravy, Mr. Allan B. Craven, and myself, and remained in view scarcely more than two minutes, taking one other perch in a neighboring tree, and then being lost to our view. As there were many observers in the Garden on this occasion, it being the appointed morning for the visit of members of the Brookline Bird Club, and this Gnatcatcher could not be found again by any of them, it is probable that the two-minute period during which it was under observation by us marked the entire length of its visit and that it passed out immediately to other haunts. Only one other visit of the Gnatcatcher to the Garden has been observed and recorded,¹ that of one on October 22, 1904, following a southeast rainstorm with warm winds of almost gale force. On the present occasion a southwesterly breeze during the preceding night warming up the day to a maximum temperature of 77° had brought in natural sequence a flight of nearly sixty migrant birds to the Garden, of thirty-one different species, including fifteen species of warblers. One other record,² intermediate in time with the two above given, was obtained in Olmsted Park, lying between Boston and Brookline, on December 3, 1910, when the Gnatcatcher was in companionship with an Orange-crowned Warbler. The citation of dates of these three occurrences observed by me indicates how accidental as to season, as well as visitant at all, is the Blue-gray Gnatcatcher in the Boston Region.—HORACE W. WRIGHT, 107 Pinckney St., Boston, Mass.

The Blue-gray Gnatcatcher (*Poliophtila caerulea caerulea*) at Quebec, P. Q.—About 2:15 p. m. (Eastern Standard Time) on May 18, 1920, I stood on the wooden walk which has been built just below the southern wall of Quebec Citadel, three hundred feet above the St. Lawrence River, at the top of the steep, rocky cliff which forms the southern face of Cape Diamond. The surface of the declivity below me was partly bare and partly covered by grass and dead weeds or scattering clumps of bushes. There were no trees anywhere in the vicinity. Among the bushes were many migrating birds, for the most pronounced wave of bird migration of the spring of 1920 reached Quebec May 18. The preceding night had been warm and hazy, with light, variable winds, and the day itself was fine and quite summer-like, with an official maximum temperature at Quebec of 76° F.

In a bush on the cliff a few feet below me I saw what at first glance I took to be a Parula Warbler. I focused my binoculars (×3) on the

¹ 'Auk,' XXII, Jan. 1905, pp. 87, 88.

² 'Auk,' XXVIII, Jan. 1911, pp. 117, 118.

bird and soon saw that my first supposition was wrong. I distinctly observed that the bird was about the size of a Kinglet, with upper parts almost uniform bluish-gray, seeming slightly lighter on the upper tail-coverts, wings fuscous, tail black centrally but with white outer feathers, and underparts uniform whitish. It was catching insects on the wing in a rather leisurely way, and I watched it for seven or eight minutes in excellent light with binoculars at distances varying from twenty to thirty feet, and obtained many clear and satisfactory views of it as it perched on the bushes and dead weed-stalks. Owing to the extreme steepness of the cliff, it was always below my eye, and while I thus saw its upperparts clearly, I could not satisfy myself as to whether or not there was black on its forehead. It frequently twitched its tail, and at irregular intervals uttered its note, which was a *pe-e-e*, low, weak, and rather hoarse. It resembled somewhat the *mew* of a Catbird, but was much lower and lighter. The bird was still among the bushes when I left.

At 4:15 p. m. the same day I returned and soon found the bird, which I watched for about half an hour, using my binoculars, and often seeing it clearly, sometimes at a distance of but fifteen feet. I verified my previous observations, and when the bird perched in a bush close beside the walk, where it was nearly at the level of my eye, I found that a clear, steady view of its forehead revealed no black. I left it where I found it, but could not rediscover it next day, nor on the day after.

Undoubtedly the bird was a Blue-gray Gnatcatcher, *Poliophtila caerulea caerulea* (Linn.). I had never seen the species before, and so do not know just how conspicuous the black on the forehead of the male should be. The only previous claim of this species to a position in the avifauna of Quebec Province appears to be the statement by Wintle (Birds of Montreal, 1896, p. 126), which reads as follows:

“‘Accidental visitant’ [at Montreal]. Mr. Kuetzing saw one ‘example of this species in Mr. Craig’s collection, shot on the island of Montreal a number of years ago,’ but Mr. Craig says he ‘does not remember having it in his possession.’”

As this can hardly be considered satisfactory, the present appears to be the first certain and definite record of the Blue-gray Gnatcatcher in Quebec Province.—HARRISON F. LEWIS, *Quebec, P. Q.*

The Russet-backed Thrush (*Hylocichla ustulata ustulata*) Taken near Charleston, S. C.—On October 22, 1901, I shot a male of this species near Mt. Pleasant that was feeding upon dogwood berries, and on May 3, 1902, I shot another specimen. These two birds were without any hesitancy labeled by me *Hylocichla ustulata swainsoni* and packed away. Last year I received a specimen of *H. u. swainsoni* taken by Mr. Otto C. Hastings at Bridgeport, Conn., which led me to compare my two South Carolina birds with his specimen with the result that the South Carolina specimens were entirely different as regards the coloration of the back.

This spring I made a special effort to obtain an Olive-backed Thrush, and on May 5, I shot a typical adult male near my home. As soon as I lifted the specimen from the ground I was satisfied that the two birds I had taken in 1901 and 1902 were none other than the Russet-backed Thrush; but to place the identification beyond question I wrote my friend, Mr. J. H. Riley, to send me a specimen of *H. u. ustulata* from the U. S. National Museum collection. Mr. Riley sent me an adult male taken by Mr. Ridgway on June 16, 1899, at Sitka, Alaska, which is identical in coloration with the two South Carolina birds. Here is a case of a Pacific coast bird occurring in South Carolina, in the autumnal as well as in the spring migration and may prove to be a regular migrant.

When I collected with my late friend, Mr. William Brewster, near Charleston in 1884 and 1885 I remember perfectly of his shooting Olive-backed and Gray-cheeked Thrushes and of his explaining the difference between these birds from specimens shot in the woods which he laid side by side. My impression is that all the of the Olive-backs he shot were typical representatives of *swainsoni*.

Since I began to collect birds in 1883 I do not believe I have shot six Olive-backed Thrushes, but of the great numbers I have seen at close range the backs seemed to me to be of the same color as the Gray-cheeked Thrush.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

Remarkable Migration of Robins.—On March 19, 1920, during a rain at midday at Chicago, the wind died out, causing the fog and smoke to settle down bringing total darkness. This condition lasted several minutes when the wind shifted from southwest to north and freshening, brought a heavy fall of wet snow. A large flock of Robins numbering several hundreds was observed on the south side of the city, near the loop, flying northwest. It took fully five minutes for them to pass a given point. A small bunch leaving the main flock would settle on wires, house-tops and vacant lots, apparently to rest before going on. These small flocks were passing for at least half an hour after the main flight had gone on. This is the first time I have seen flocks of Robins, in the daytime, in such unusual numbers.—EDW. E. ARMSTRONG, *2249 Calumet Avenue, Chicago, Ill.*

Some Rare Birds, for Yates Co., N. Y.—**Melospiza lincolni lincolni.** LINCOLN'S SPARROW.—On October 13, 1901, I secured a male of this species, the only one I have ever observed here.

Tringa canutus. KNOT.—This is a rare bird in Western New York, to say nothing of Yates Co. I obtained a specimen for identification on September 11, 1904, while it was associating with a host of other Sandpipers along Lake Keoka. This seems to be the first recorded occurrence of the Knot here since 1874.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—It was my pleasure to add this bird which is extremely rare here to my Yates Co. list on

June 7, 1911, when I heard its oft repeated "pip pip pip" always three times with an interval before the next call. I found him perched on the peak of a dead pine along a hemlock clad gully.

Buteo platypterus. BROAD-WINGED HAWK.—The only time I ever observed this hawk hereabouts, was on April 24, 1913, when I not only heard the familiar plaintive cry, but observed the bird clearly as it flew along the willow-fringed shore of Lake Keoka. It is singular that the Broad-wing does not occur here as a breeder for the moist woodland of Potter swamp would be an ideal nesting haunt for it. This is the only noted occurrence during 29 years of active field work.

Olor columbianus. WHISTLING SWAN.—Five of these graceful swans descended into the west branch of Lake Keoka during a snow storm on November 13, 1919, remaining all afternoon and night. So far as I am aware this is the first occurrence of swans hereabouts since November 1, 1905, when five appeared on Lake Keoka near Penn Yan. Of the latter one was reported killed on November 25.

Just previous to November 13, 1919, five swans were reported on Seneca Lake which were probably the same birds, that were seen here.—CLARENCE F. STONE, *Branchport, N. Y.*

Notes from Springfield, Mass. **Aluco pratincola.** BARN OWL.—About the first of last December a Barn Owl was taken in Forest Park, in Springfield. There are but two other records of the presence of representatives of this species of bird in this part of the Connecticut valley.

Spizella monticola monticola. TREE SPARROW.—In February, 1916, ten Tree Sparrows were taken alive in Longmeadow, a suburb of Springfield, banded, and then liberated. This act was done on premises where, for a long time during the colder months of each year, wild birds had been liberally supplied with food. Three of these banded birds returned and made their home on these premises during each of the two succeeding winters. During the season of 1918 and 1919 the house on this lot was closed, and it was not known whether any of these birds were then present or not. This winter the house was again occupied, and food provided for the birds, and two of these Tree Sparrows appeared there, each wearing the band that was placed on its leg four years ago.—ROBERT O. MORRIS, *Springfield, Mass.*

Notes from St. Louis, Mo.—Four Whistling Swans(*Olor columbianus*) were seen on Dardenne Island, Mississippi River, about ten miles above the mouth of Illinois River, March, 1919.

They are the first wild swans seen in this locality in many years—I found only one old fisherman and trapper who could recall seeing swans in this locality before, and he stated they were the first he had seen since the early nineties. I saw these four adults on the Island, March 20, 1919, at 10:42 A. M., and approached within fifty yards of them in a motor boat. They were such a grand sight, I did not attempt to collect a specimen. They were first seen in this locality about March 1, 1919.

A Blue Goose (*Chen caerulescens*) was killed at Golden Eagle, Ill., on the Mississippi River, October 25, 1919. It was a fine adult male, the first seen in this locality in many years, and was shot by C. A. Vogel.—F. ROY DEAN, *St. Louis, Missouri*.

Merrem's 'Beytrage.'—As is well known, Merrem's 'Beytrage zur besondern Geschichte der Vögel' consists of two parts published in 1784 and 1786, both in German. A Latin edition of both parts appeared in 1786.

Recently Dr. C. W. Richmond wrote me that there was some question about the names which appear on the plates of the first part. A copy before him when he wrote had only German names, while the copy that he had consulted some time before in the library of the Academy of Natural Sciences of Philadelphia, according to his memoranda, had both German and Latin names, as is the case with the second part. Upon examining this latter copy I find that Dr. Richmond is correct. It is, however, perfectly evident that the Latin names have been added after the plates had been engraved, for while the German names are centered, the Latin ones are placed either before or after them wherever there was more space, and are in a different hand. At first I was of the opinion that they had been written by hand, but after a very careful examination I am convinced that they have been etched into the plate as there is some difference in the color of the ink on the several plates, some being jet black while others are decidedly brown, and in every case the Latin names correspond in tone with the rest of the plate. Moreover the handwriting of the Latin names in part one is the same as that of all the names in part two.

The conclusion is therefore obvious that the 1784 edition of part one was printed without Latin names, but that when part two appeared the engraver added Latin names to the plates of part one and an extra edition was printed to accompany part two, although the date was not changed. The result is that the names *Cotinga rubra* and *C. cuprea* (Plate 1); *Gracula nobilis* (Plate 2); *G. chrysoptera* (Plate 3); *Mellisuga coccinea* (Plate 4); *Merops spiza* (Plate 5); and *Muscicapa ferruginea* (Plate 6) have no standing from this part at 1784 but date, so far as this work is concerned, from 1786.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

Erratum. The memorial to the late William Brewster, adopted by the Nuttall Ornithological Club and published in 'The Auk' for January, p. 27, was prepared by Mr. F. B. White, not "E. B. White" as printed.—*Ed.*

RECENT LITERATURE.

Mathews' 'Check List of the Birds of Australia, Part I.'—Having reached the half-way point in his great work on the birds of Australia, Mr. Mathews publishes a list of all the species so far treated, with the synonymy of each and references to his own plates and those of Gould. He explains that while the work was in progress so many questions relating to the proper names for the various species were under discussion, that the names used on the plates are in many cases not those that he would use today. Hence the need of a list of present day names with the proper concordance.

As Mr. Mathews' work progressed there has been noticeable a constantly lessening degree of importance attached to the subspecies, until now they have reached a condition of degradation that will delight the hearts of certain of his Australian friends who for some years past have been complaining of the tremendous increase in the number of "kinds" of birds that he has named. Mr. Mathews explains that "the number of subspecies accepted must always be a variable one, according to the material available and to a certain extent upon the personal idiosyncrasy of the worker," and therefore he thinks that a list of the species only, with the subspecies arranged under them will be of more general use. As a matter of fact he lists the subspecies along with synonyms etc., so that it is absolutely impossible to tell from the list how many he intends to recognize. Some are in binomial form, others in trinomial and some of each class he accepts while others he rejects. Never the less this list, as he says, will probably be of more general use than any of its predecessors.

A very valuable feature is the determination of the exact date of publication of each name as nearly as it is possible to ascertain it, as well as the place and method of the type fixation of each genus.

In the preface Mr. Mathews has a brief defence of his attitude on generic subdivision in which he claims not to be an extreme splitter. His comparison with the work of the B. O. U. Committee does not seem to us very well taken and the fact that of the 279 genera that he considers are necessary for the 334 species listed, he has had to establish at least sixty that were not deemed necessary by any writers up to the time of the 'British Museum Catalogue'—and sometime after—seems to stamp him as rather an extremist in the matter of generic division. Mr. Mathews certainly shows commendable perseverance in his efforts to make his generic division consistent but the point is that a large majority of scientific workers do not concede the necessity for such effort when our nomen-

¹ Supplement No. 1. The Birds of Australia. By Gregory M. Mathews. Check-List of the Birds of Australia, Part I. Orders Casuariiformes to Menuriformes. London: Witherby & Co., 326 High Holborn, W. C. I. February 16, 1920, pp. 1-116.

clature is, by the process, rendered meaningless except to the favored few. The reviewer has already expressed at length his view that the groups demanded by consistency or for phylogenetic purposes can just as well be expressed as subgenera without making a plaything of our nomenclature. (Science, April 20, 1920, p. 427.) Generic subdivision seems to us, to quote Mr. Mathews' expression, even more a matter of "personal idiosyncrasy" than the coining of subspecies. We are all agreed with Mr. Mathews on the importance of recognizing differences (and resemblances too!) but it should and can be done without inconveniencing everyone else. As the instructions to the binder suggest the binding of this "Part" at the end of Volume VII we infer that "Part 2" will not appear until the work is entirely completed, by which time let us hope that our good friend the author will have adopted the same conservative stand upon genera that he has now reached in regard to subspecies.—W. S.

Mathews' 'Birds of Australia'.¹—Part I of Volume VIII appeared on May 5, 1920, and in it Mr. Mathews begins the treatment of the long list of passerine birds. The Pittidae, Atrichornithidae and Hirundinidae are completed in this number and the first species of the Muscicapidae are considered.

A rather lengthy discussion of the classification of the Passeriformes begins the number which is well worth careful reading. While the author does not advance any new ideas in the classification which he adopts, he presents some rather caustic criticism of characters used and diagnoses of groups, presented by others. His principal grievance seems to be with the importance accorded to anatomical characters and after quoting a diagnosis of the family Picidae: "Feet zygodactyle; after-shaft small or elementary; oil-gland tufted. Muscle formula of leg, AXY (AX); gall bladder elongated; skull without basipterygoid processes," he says: "Surely it is time to provide some more reasonable kind of guide to bird study than such inadequate terminology," and again in referring to anatomical terms he says that they "mean little or nothing to the ornithologist who has to deal with skins and not much more to anyone else."

While we are willing to admit Mr. Mathews' contention that too much weight may have been given to certain anatomical characters and that even the structure of the syrinx in the Pittidae may not necessarily indicate any close relationship to Neotropical groups with similar structure, but may merely indicate degeneration in both instances from "oscinine" types; there is still no reason why they may not have come from the same stock and represent isolated groups of a widespread type now approaching extinction. Mr. Mathews does not think, moreover, that similarity in syrinx structure should be held to unite such dissimilar-looking birds as the

¹The Birds of Australia, Witherly & Co. Vol. VIII. Part 1, May 5, 1920.

Pittas, the Philepittas of Madagascar and the Xeniscidae of New Zealand, but in the South American Tyrannidae or Formicariidae we find just as much divergence in external characters among species which we feel sure must be closely allied.

At any rate we cannot think that Mr. Mathews is really serious in the statement quoted above, regarding the work and terminology of the anatomist, since in his succeeding pages he repeatedly calls for anatomical investigation of Australian birds and states that a description of the skeletons of the principal types of Muscipidae would be "worth much more than any series of skins." This is the true scientific spirit and we can hardly think that he would do away with the characters proposed by the anatomist merely because the terminology is meaningless to the student of skins. There is, however, much food for thought in the matter that he has discussed.—W. S.

McGregor's 'Index to the Genera of Birds'.—In 1889 appeared a work entitled 'Index Generum Avium. A List of the Genera and Subgenera of Birds,' by F. H. Waterhouse, librarian to the Zoological Society of London. For over thirty years this has constituted an indispensable work of reference to all systematic ornithologists and in 1902, 1909 and 1917 Dr. C. W. Richmond published in the 'Proceedings of the U. S. National Museum,' three supplements to it, listing not only the generic names proposed for birds in the intervening years, but a list of names overlooked by Waterhouse and another list of names given by him which are not proposed as genera or apply to other groups than birds.

Mr. McGregor¹ has now given us another volume very similar in scope to that of Waterhouse but bringing the matter up to 1917. He does not base his catalogue upon Waterhouse's 'List' but begins de novo, cataloguing successively the generic names mentioned in Bonaparte's 'Conspectus' of 1850 and 1865; Gray's 'Hand-list,' 1869-1871; the 'Catalogue of Birds of the British Museum,' 1874-1895; Sharpe's 'Hand-list,' 1899-1909; DuBois's 'Systema Avium,' 1899-1904; and Richmond's three 'Supplements' to Waterhouse. The names thus compiled were then arranged in alphabetical order and under each is given the volume and page reference to all of the above works in which it may have been mentioned, the reference being printed in heavy-faced type if the name is recognized as valid, and in light-faced type if it is given as a synonym. The author of the name does not appear, nor does the original place of publication, but from the references cited the full history of the name can usually be ascertained and these matters looked up by the investigator. As Waterhouse usually only gave one reference, and that by no means always the original one, Mr. McGregor's plan really leads us directly or indirectly to much more information regarding the name which we are investigating than did the older work. Furthermore the brevity of his references enables him to print the names in three columns to the page

and makes it possible to include the whole 8839 names and some 24,000 references on 180 octavo pages.

A casual glance over the pages does not disclose any typographical errors and we have been able to find only one omission. The real test of course must come from actual use, but the general appearance of the list indicates a very careful piece of work.

A recent letter from the author states that his editorial duties seriously interfere with his ornithological research work, but if his time and opportunities permit only of the preparation of such valuable compilations as the one before us he need have no fear of being charged with neglecting his favorite science. Anyone who has had experience with the dreary monotony of compiling a list or index will fully appreciate the labor involved in Mr. McGregor's modest publication and will recognize the indebtedness that all those interested in systematic ornithology must feel toward him for his helpful work. McGregor's 'Index' will henceforth take the place of the familiar 'Waterhouse' and the fact that a publication of this sort bears the imprint of Manila is a tribute to the good judgment of those who direct the Philippine Bureau of Science.—W. S.

Witherby's 'Handbook of British Birds.'¹²—The appearance of a bulky double part 7-8, on April 8, completes the first volume of this admirable work. The birds treated cover the Thrushes and their allies, the Wrens, the Dippers and the Swallows, while two half-tone plates illustrate the juvenal plumages of the first of these families and a third depicts the several geographic races of the Wren and the Dipper.

The genus *Nannus* is regarded as not separable from *Troglodytes* and our American Winter Wren and Barn Swallow are regarded as subspecies of their European representatives instead of distinct species.

The work lives up to the high standard established by the first part and volume one is completed before the time set by the publishers, on both of which accomplishments they are to be congratulated.—W. S.

Hartert's 'Die Vogel der palaarktischen Fauna.'—The present part of Dr. Hartert's famous work covers the Ibises, Herons, Flamingos and Ducks and Geese. The treatment is the same as in the preceding parts and the same high standard is maintained. We notice in the nomenclature certain practices which differ from those of the A. O. U. 'Check-List.' The genera *Herodias* and *Egretta* for instance are united, as are also *Anas*, *Nettion*, *Querquedula*, *Chaulelasmus*, *Mareca* and *Dafila*, while

¹ Index to the Genera of Birds. By Richard C. McGregor. Manila, Bureau of Printing, 1920, pp. 1-185. (Dept. of Agriculture and Natural Resources. Publication 14, March 31, 1920.)

² A Practical Handbook of British Birds. Edited by H. F. Witherby. Parts 7-8, April 8, 1920. Price 4s. net per part. Witherby & Co., 326 High Holborn, W. C. I.

Chen is not considered separable from *Anser*, nor *Olor* from *Cygnus*. Our Redhead, moreover, is regarded as a subspecies of *Nyroca ferina*, and our Green-winged Teal a subspecies of *Nettion crecca*. While we personally approve some of the generic reductions we do not think that the facts warrant these subspecific references. The reference of all the forms of Green Heron as subspecies of the South American *Butorides striatus* also seems unwarranted. Under this species we notice two new forms: *B. s. degans* (p. 1251), Seychelles; and *B. s. moluccarum* (p. 1251), Moluccas.

Increased cost of printing necessitates an increase in the price of the work of eight marks per part.—W. S.

Chapman's 'What Bird is That?'¹—In these days when almost every other person one meets is a bird student, there is a constant demand for bird books especially those that present the subject in a novel manner. Such a work is the latest of Dr. Chapman's ornithological textbooks entitled 'What Bird is That?' which answers the question presented in its title in a most satisfactory manner.

Instead of the usual analytical key we find at the beginning of the volume little colored pictures of all the land birds of the Eastern United States. They are represented on stands and branches as mounted museum specimens, arranged on the shelves of a case, or series of cases, and are grouped according to season, so that in cases 1 and 2 we find all of the winter birds of the region, in cases 5 and 6 the early spring migrants and so on. Having found our bird among the colored figures we turn to the main text which covers the 300 species of the Eastern States and find a short description with dates of occurrence at several localities, taken from the author's well-known 'Handbook,' and a paragraph covering the more striking habits of the species, and its nesting.

The book is an elaboration of the plan, first adopted, we believe, by Dr. Chapman, in the American Museum of Natural History, of exhibiting in one case the birds present about the immediate neighborhood and changing the specimens from month to month as the winter birds depart and the migrants arrive from the south. This narrows down the task of identification to the species most likely to be seen at the time and eliminates many confusing possibilities.

The artist Mr. E. J. Sawyer is to be congratulated upon the accuracy of his figures for in spite of their small size—there are sometimes over 40 on a page—he has presented characteristic poses for the most part, while no important detail of color seems to have been overlooked.

¹What Bird Is That? A Pocket Museum of the Land Birds of the Eastern United States arranged according to Season. By Frank M. Chapman. Curator of Birds in the American Museum of Natural History and Editor of 'Bird-Lore.' With 301 Birds in Color, by Edmund J. Sawyer. D. Appleton and Company, New York and London, 1920. 12mo., pp. i-xxvi, 1-144, 8 color plates. Price \$1.25 net.

Dr. Chapman's text is admirable and the whole conception of the work is another illustration of his ability to feel the pulse, as it were, of the bird loving public and provide what they need. The several line cuts which are scattered through the text might well have been omitted as they have not come out very satisfactorily on the rough surfaced paper, that of the Red-shouldered Hawk intended to illustrate the barred tail showing this appendage solid black.

The scientific nomenclature wisely follows that of the A. O. U. 'Check-List' and does not, like certain recent publications—even some issued by the Biological Survey, attempt to be up to date by using names not yet considered by the A. O. U. Committee and which the popular reader cannot find in the books with which he is familiar. If we do not follow a standard nomenclature in works intended for the general public we had better omit scientific names entirely.

In his English names Dr. Chapman also follows the 'Check-List' with two notable exceptions. Water-Thrush appears with the prefix "Northern" and Crossbill with that of "American." The abbreviated names have never met with favor and are ambiguous as there is another Water-Thrush and two other Crossbills. While we heartily endorse "Northern Water-Thrush" we prefer "Red Crossbill" which has been suggested by several writers, and trust that the Committee may adopt these changes in the next edition of the 'Check-List.'

We heartily recommend Dr. Chapman's little book to those desiring to name the birds they see, as probably the best pocket guide that has yet appeared.—W. S.

Horsfall on the Habits of the Sage Grouse.¹—In 'The Auk' for 1900, Mr. Frank Bond has an article and an original drawing illustrating the nuptial performance of the Sage Cock. He corrects Dr. Newberry's statement that the bird drags its wings Turkey-like and describes in detail a process of bending over and pushing the distended breast sacks over the ground, thus producing the wearing away of the feathers on these parts, something that was not previously explained.

Those who attended the A. O. U. meeting in New York in November, 1919, and saw Mr. W. L. Finley's motion pictures of these birds in action were surprised to see that Mr. Bond's account is apparently as much in need of correction as was Dr. Newberry's and that the bird's breast is held high and never touches the ground at all, the edges of the wings being rubbed over it when the sacks are distended. Mr. Horsfall who accompanied Mr. Finley now describes the activities of the mating birds and presents several sketches and a color plate to illustrate the successive stages of the performance. His account of the wearing away of the breast feathers is however by no means as clear and explicit as might be desired.—W. S.

¹ Zoologica. Scientific Publication of the N. Y. Zool. Soc.

Kirke Swann's 'Synoptical List of the Accipitres.'¹—Part IV of this work brings it to a conclusion and from the preface which accompanies it we learn that it is largely based upon the late Dr. Bowdler-Sharpe's 'Catalogue of the Accipitres in the British Museum,' the author's annotated copy with his additions having been accessible to Mr. Swann; and also upon Mr. W. L. Selater's manuscript list of the specimens in the Museum. While the author uses subspecies extensively he does not seem to recognize intergradation as the criterion upon which they must be distinguished from species since he recognizes three 'species' of our American Sparrow Hawks, all of which are usually regarded as subspecies of *sparverius*.

He also considers that the dark Gyrfalcons which visit Canada in winter as young of *F. rusticolus candicans* rather than true *rusticolus*.

While Mr. Swann's little work summarizes our present systematic knowledge of the Accipitres it seems to indicate that much has still to be accomplished before we are prepared to satisfactorily monograph the group.—W. S.

Bibliography of British Ornithology.²—The third part of the 'Biographical Bibliography of British Ornithology' by Messrs. Mullens, Swann and Jourdain contains the contributions to county ornithology from Middlesex to Surry. One will gain some idea of the extent of the literature relating to the birds of the English counties when he finds that for Norfolk alone the authors have listed 600 titles, while the number of additions each year is constantly increasing. Few of our states can show such a bibliography while many of our counties are without any ornithological notes whatever. This work serves as an excellent illustration of the extent of intensive study of birds in Great Britain and the vast number of persons who are interested and capable of publishing local notes of value. Part four completes England and begins Wales.—W. S.

Brook's 'The Buzzard' at Home.¹—This little brochure is entitled "British Birds Photographic Series" and is apparently the first of the series. It consists of twelve excellent half-tone reproductions of photographs of the European Buzzard, its nest and young, with fourteen pages

¹ A Synoptical List of the Accipitres (Diurnal Birds of Prey). Part IV. Falconidae and Pandionidae. By H. Kirke Swann. London: John Wheldon & Co., 1920. Price 4s.

² A Geographical Bibliography of British Ornithology from the Earliest Times to the end of 1918. Arranged under Counties, being a Record of Printed Books, Published Articles, Notes and Records Relating to Local Avifauna. By W. H. Mullens, H. Kirke Swann and Rev. F. R. C. Jourdain. Witherby & Co., 326 High Holborn, London. 1920. Part 3, 193-288; Part 4, 289-384. Price 6s. net. per part.

¹ The Buzzard at Home. By Arthur Brook, with 12 photographic plates. London: Witherby & Co. Price 3/6.

of text by Mr. Brook describing the habits of the birds and his experiences in photographing them. The whole forms an attractive and interesting contribution to the life history of this hawk, likely to lead others into the field of bird photography and the study of the living birds in which the author seems to be an adept.—W. S.

The Nebraska Waterfowl and their Food.²—This contribution from the Biological Survey consists of two parts, 'Waterfowl in Nebraska, by Dr. Harry C. Oberholser and 'Wild Duck Foods of the Sandhill Region of Nebraska' by W. L. McAtee.

The sandhill region of Nebraska, containing as it does innumerable small lakes and marshes is a natural resort of various species of waterfowl and the object of the present publication is to place those who may be interested in the conservation of these birds, data on their relative abundance and habits and the methods by which this region may be made more attractive for them. Dr. Oberholser visited most of the lakes and obtained a wealth of information regarding the birds which inhabit them as well as data on past and present conditions there. He has given lists of the species found on the more important lakes and an annotated list of all of the species observed, their habits, relative abundance, etc., together with warnings as to the dangers attending the draining of the lakes in the consequent extermination of the wildfowl.

Mr. McAtee has reported upon collections of the marsh vegetation gathered about a number of the lakes, pointing out the relative value of the various plants as duck food and suggesting other species which would probably thrive there if introduced.

As a whole the pamphlet, which we trust may have a wide circulation in the region of which it treats, gives to the sportsmen of Nebraska all of the data required in any effort that they may be inclined to make for the conservation of this natural breeding ground for the ducks. And in view of the rapid destruction of the former breeding grounds farther north, it is none too soon to take every opportunity to save all such regions as this, which still remain in the United States, from thoughtless destruction. It would be a fine thing if the Legislature of Nebraska would make this lake region a permanent State preserve for the breeding of waterfowl, which could apparently easily be done without any inconvenience to the grazing or farming interests as it is not suitable for either.—W. S.

Bartsch on the 'Bird Rookeries of the Tortugas.'¹—Among the contributions to the 'Annual Report' of the Smithsonian Institution for

² Waterfowl and Their Food Plants in the Sandhill Region of Nebraska. Part I. Waterfowl in Nebraska. By Harry C. Oberholser, Assistant Biologist. Part II. Wild-Duck Foods of the Sandhill Region of Nebraska. By W. L. McAtee, Assistant Biologist. Bulletin 794, U. S. Department of Agriculture. March 23, 1920, pp. 1-77, plates I-V.

¹ The Bird Rookeries of the Tortugas. By Paul Bartsch. Smithsonian Report for 1917, pages 469-500 (with 38 plates). Washington, 1919.

1917, which has recently appeared, is a paper on 'The Bird Rookeries of the Tortugas' by Paul Bartsch. Dr. Bartsch is familiar with the islands and gives us an account of their physical features from his personal observations and a series of thirty-eight plates from original photographs of the bird colonies. The Tortugas are by no means unknown ground to the ornithologist for from the time of Audubon's visit in 1832, many bird students have visited them and described their bird life; while it was on these islands, that Dr. J. B. Watson conducted his now famous experiments on the homing of wild birds. From all of these writings, Dr. Bartsch has compiled interesting accounts of the various species of birds which inhabit the group, adding personal observations as well, and concluding with a table of the species observed or collected by such ornithologists as have visited the islands since 1857. The pamphlet makes a handy summary of our knowledge of the bird life of this interesting island group. Dr. Bartsch has also published in diary form some observations on the birds of the Florida Keys and southern Florida in the 'Year Book of the Carnegie Institution' for 1919, pp. 205-210, including notes on 97 species.—W. S.

Bangs and Penard on 'Two New American Hawks.'¹—In studying the birds of prey in the Lafresnaye collection at the Museum of Comparative Zoology the attention of the authors was attracted to the existence of two races of *Accipiter superciliosus* and the form inhabiting Costa Rica southward to Colombia has been named *A. s. exiliosus* (p. 45) type from Carrillo, Costa Rica. The difference in the size of the White-tailed Kites from the United States and Middle America as compared with those of South America has also prompted the naming of the former as new, and it appears as *Elanus leucurus majusculus* (p. 47), type from San Rafael, California. The difference in the average wing length is only 15 mm., however, and the individual specimens overlap by 10 mm.—W. S.

Kuroda on New Japanese Pheasants.²—In this review of the Japanese pheasants of the genus *Phasianus*, printed in Japanese, the descriptions of the new forms are also given in English. These are *P. versicolor robustipes* (p. 299), Sado Island; *P. v. kiuisiensis* (p. 300), Kiuisu Island; *P. v. tanensis* (p. 300), Tanegashima Island; *P. soemmerringi subrufus* (p. 303), warmer districts on the Pacific side of Hondo, type from Oisan, Prov. Suruga; *P. s. intermedius* (p. 304), Shikoku and southwestern Hondo, type from Yunoyamamura, Prov. Iyo.—W. S.

¹Two New American Hawks. By Outram Bangs and Thomas Edward Penard. Proc. N. E. Zool. Club, Vol. VII, pp. 45-47. February 19, 1920.

²Descriptions of Five New Forms of Japanese Pheasants. By Nagamichi Kuroda. Dobutsugaku Zasshi (Zoological Magazine) Vol. XXXI, 1919, pp. 309-312.

Freeman's 'Bird Calendar for the Fargo Region'³—As an aid to local bird students Mr. Freeman has presented in the April, 1919, issue of the 'Fargo College Bulletin' a list of the birds of the vicinity of Fargo, N. Dakota, with the dates of arrival or of occurrence taken mainly from his personal records. While the author makes no claim for completeness and solicits additional data, the fact that he has been able to include 181 species, hows that his little list forms an important contribution to the published literature of the birds of North Dakota. The species are arranged in systematic order with annotations. Let us hope that this excellent start may be the forerunner of a more extensive report later on, when the co-operation for which the author asks will undoubtedly add a number of species and further data of interest.—W. S.

Grinnell on the English Sparrow in Death Valley.¹—Dr. Grinnell on a recent trip to Death Valley was surprised to find a colony of English Sparrows established at the Greenland Ranch, 178 feet below sea level. He points out the fact that so far, during a period of about fifty years, no differentiation from the original English stock has been detected in the birds reared in this country. The fact remains, however, that the conditions under which the birds live have perhaps not differed materially from those prevalent in England. Now, however, we have a colony of them established in a spot characterized by probably the highest temperature and lowest relative humidity of any place in North America, and the presence of the birds at this point constitutes, as Dr. Grinnell says, an experiment actually under way which should show how permanent are the subspecific characters which separate this bird from the related European forms. The negative evidence obtained from a study of the bird in other parts of the United States which upholds the permanency of these characters seems to Dr. Grinnell to suggest that they are really germinal rather than somatic.

In his apparent haste to be up-to-date, Dr. Grinnell has adopted Kleinschmidt's separation of the English race from that of the continent, although neither Witherby nor Stresemann has been able, with abundant material, to satisfactorily distinguish them. This latter fact seems to emphasize the remarkable permanency of the characters of this bird. Does it not seem that some forms are very much more plastic and sensitive to environmental conditions than others and that *Passer domesticus domesticus* is one of the most difficult to change? Dr. Grinnell's problem is an interesting one and in the same connection would it not be in order to repeat Mr. Beebe's experiment on the effect of humid atmospheric con-

³ A Bird Calendar of the Fargo Region. By Daniel Freeman. Fargo College Bulletin, XV, No. 1, April, 1919, pp. 9-16.

¹ The English Sparrow has Arrived in Death Valley: An Experiment in Nature. By Joseph Grinnell. American Naturalist, Vol. LIII, Sept.-Oct., 1919, pp. 468-473.

dition on the coloration of the Ground Dove? That single experiment is quoted more than perhaps any other in exploiting the evanescent character of subspecific differences and so far as we know it has never been checked nor has very serious consideration been given to food or a variety of other factors that may have entered into it.—W. S.

Rowan and Others on the Nest and Eggs of the Common Tern.¹

The egg collector who applies for a collecting permit on the ground that he is engaged in "scientific research" would do well to consult this paper in order to appreciate the opportunity for real scientific research that is offered in the study of birds eggs. Only expert mathematicians will be able to follow intelligently the computations and calculations which are presented but the results and hypotheses are of interest to all. Briefly stated the work here reported consisted in the measurement of some 800 clutches of Tern's eggs with notes on the character of the markings and shade of color of the eggs and the nature and location of the nests in which they were deposited. With these data it was possible to prepare tables and to determine the probable correlation between certain measurements and colors, or between measurements and colors and character of nests, as well as the cause or meaning of differently colored eggs in the same nest. The work was accomplished by three field workers, one reporter and three tabulators and computers, and was in reality a continuation of a similar study carried on in the previous year. The final results show that the eggs averaged larger in 1914 than in 1913 and exhibited more uniformity, both due apparently to the bad season of 1913, when the very young and very old birds may have perished, and to the exceptionally favorable year of 1914, when food was unusually abundant.

In regard to shape of egg and character of nest it was found that the more nearly spherical eggs were in the most careless, and loosely constructed nests, while the denser brown and lighter green eggs were more often in nests without much material, i. e., mere hollows in the ground.

The resemblance of the color pattern to the nest brings in all sorts of complications. With eggs as variable as those of the terns it is inconceivable that the bird has, when building her nest, any conception of what her eggs are going to be like. As the authors say such an instinct would be conceivable in the case of a species laying uniform eggs and building a specific type of nest, but not in the present case. The fact that the terns were frequently found to begin laying before they gathered any nest materials would raise the possibility of their adapting the materials to the character of the eggs. Then comes the possibility of there being two

¹ On the Nest and Eggs of the Common Tern (*S. fluviatilis*). A Comparative Study. W. Rowan, E. Wolf, and the late P. L. Sulman, Field Workers; Karl Pearson, Reporter; E. Isaacs, E. M. Elderton, and M. Tildesley, Tabulators and Computers. *Biometrika*, Vol. XII, Nos. 3 and 4, November 26, 1919, pp. 308-354, plates II-VI.

types or genes of terns, one laying green eggs and the other brown. This would, however, necessitate mating always within the gens or the transmission of the egg coloring mechanism through the female only. The former is hardly conceivable while the latter is contrary to the experience of breeders that female characters are transmitted through the males. This theory too would require some Cuckoo-like females laying in the nests of other individuals to produce the varied sets of green and brown eggs in the same nests, which for various reasons does not seem credible. The most likely theory seems to be that any female tern may lay either a green or a brown egg but that with the physiological exhaustion incident to successive egg laying the nature of the pigment of the egg laying glands changes. This would explain the undoubted fact shown by the tables that the number of green eggs increases with the number in the clutch, there being 74 brown to 63 green in clutches of a single egg; 153 brown to 203 green in clutches of two; and 216 brown to 393 green in clutches of three. There are a number of admirable photographic plates showing the birds and nests and a color plate illustrating extreme phases of egg coloration. The paper is well worth careful study by those interested in the theories upon which it touches or in mathematical methods in research—W. S.

Report of the National Zoological Park.²—In his annual report as superintendent of the National Zoo, Mr. Hollister presents a number of interesting statistics. The number of species of birds in the collection is 190, exactly the same as last year, although the individuals are slightly more numerous. The death of the female Trumpeter Swan which had just been successfully mated with the male loaned by Mr. R. Magoon Barnes was a calamity, and until other specimens of this disappearing species can be secured will check any attempt to perpetuate it. Several birds, long residents of the garden, also died during the year, including a Crowned Hawk Eagle (*Spizaetus coronatus*), a resident for nearly 18 years; two tree ducks (*Dendrocygna arcuata*) which had lived there for 15 years and a Snowy Egret for eleven years.—W. S.

Ornithology of the Princeton Patagonian Expedition.—Part IV of this sumptuous work appeared in July 8, 1915. Like the preceding parts it is the work of the late Dr. R. Bowdler Sharpe and W. E. D. Scott, their manuscripts having been published with only slight changes in nomenclature and minor details. The editing has been done by Dr. Witmer Stone who will prepare the text for the remainder of the work as the manuscripts of the late authors were only completed to the end of the Accipitriformes. The present part covers pages 505-718, and includes the Pelicaniformes, Accipitriformes and Strigiformes.

² Report of the Superintendent of the National Zoological Park for the Fiscal Year ending June 30, 1919. Ann. Rep. Smithsonian Inst. for 1919, pp. 68-81, 1920.

The text is very full with extended quotations from various writers on the birds of the region and there are 116 text figures of heads, feet, wings, etc., from line drawings by Bruce Horsfall.—J. A. G. R.

Nicoll's 'Handlist of the Birds of Egypt.'¹—This well prepared work is an annotated list of 436 species of birds occurring in Egypt north of Wadi Halfa, the northernmost town of the Sudan. It is based upon Mr. Nicoll's thirteen years' experience in studying the birds of the country and upon a collection of about 4000 specimens obtained during that time and now deposited in the Zoological Museum at Giza.

The English and scientific name of each species is given, the latter being the "most suitable and easily understood" of the several that may be current. Then follows a statement of the relative abundance and time of occurrence, and a short concise description. There is also a reference to Shelley's 'Birds of Egypt' if the species is mentioned in that work, though we notice that Mr. Nicoll has added quite a number not found by that author. A few species entered in previous lists but not verified he has wisely omitted, quoting in this connection the apt saying that "What's hit is history; what's missed is mystery." An Appendix gives such Arabic names as have been applied to the Egyptian birds. The illustrations consist of 31 plates, most of them half-tones of skins of Chats and Warblers while the others are rather crudely tinted figures of a number of species. The book is a publication of the Ministry of Public Works issued by the Government Press at Cairo to meet a demand for information upon the identity of the native birds, which was especially urgent during the period of the war, when many visitors were in the country. Mr. Nicoll is to be congratulated upon an excellent piece of work both for the instruction of the public and for handy reference of the ornithologist who desires an up to date list of the birds of Egypt.—W. S.

Sachtleben on Goldfinches.²—This paper is an elaborate discussion of the geographic forms of the Black-headed Goldfinches of Europe and Africa. Eleven races are recognized by the author and long lists of specimens with measurements are presented, with a full discussion of synonymy and relationship.

Names are available for all of the forms recognized, though we notice that one of them, *Carduelis c. balcanica*, was named by the author in a previous paper in the 'Anzeiger Ornith. Gesellsch. Bayern' for February, 1919.—W. S.

¹ Hand-List of the Birds of Egypt. By M. J. Nicoll, F. Z. S., M. B., O. U. Assistant Director, Zoological Service. Publication No. 29. Ministry of Public Works, Cairo, Egypt. Government Press, 1919, pp. i-xii, 1-119, pls. 1-31. Price: P. T. 15.

² Die geographischen Formen des schwarzkopfigen Distelfinken. Von Dr. H. Sachtleben. Arch. f. Naturg. 84 Jahrgang. February, 1920.

Carter's 'Shooting in Early Days.'—In a neatly printed little pamphlet issued privately by Mr. Charles Morland Carter he describes his experiences as a gunner beginning about the year 1864. His early reminiscences deal with New England and are full of association with William Brewster and Ruthven Deane, two of his boyhood acquaintances. Later come his experiences in Iowa, Kansas, Oklahoma and other portions of the middle West.

Besides the interest that attaches to a personal narrative of this kind there is much of value to the ornithologist in the accounts of the Quail and Woodcock shooting of those times and the several mentions of Passenger Pigeons, especially of a trap shooting contest at Concord Junction in 1872, in which Deane and Brewster participated and in which the birds were 200 Passenger Pigeons purchased for the occasion.

If other sportsmen whose experiences date back to the sixties, would follow Mr. Carter's example we should have preserved many valuable records of the early abundance of game birds which otherwise will be lost forever.—W. S.

Recent Publications on Conservation and Education.—The April 1920, number of the 'Nature Study Review'¹ is a bird-study number containing many short articles on various species. The most noteworthy contribution is by Anna B. Comstock: 'Suggestions for a Graded Course in Bird Study' which will be welcome to many teachers. The suggestion is made of collecting one or more old nests and mounting them in cardboard boxes beside which may be mounted a standard outline drawing of the species colored by the student. The use of colored drawings instead of mounted birds or skins will soon become a necessity as the supply of old birds in museums, etc., becomes exhausted.

Mr. John H. Wallace's 'Alabama Bird-day Book'² is as usual an admirable assistant to teachers engaged in conducting Bird-Day exercises. This year's issue contains a special article by E. H. Forbush on the migration of North American birds into the countries to the south of us and the importance of securing co-operation there for their protection as has been accomplished with Canada on the north.

Miss Althea R. Sherman has an interesting 'Historical Sketch of the Park Region about McGregor, Iowa, and Prairie Du Chien, Wisconsin'³ in 'Iowa Conservation' Vol. III. Nos. 1 and 2, in which she advocates the establishment of a park or reservation on the Iowa side of the Mississippi, opposite the one secured by Senator Robt. Glenn at the mouth of the Wisconsin River.

¹ Shooting in the Early Days, from 1863 to 1919. By Charles Morland Carter, St. Joseph, Missouri. December, 1919. Printed for Private Distribution. Grogg Printing Co., pp. 1-38.

² Nature Study Review. Ithaca, N. Y.

³ Alabama Bird-Day Book, Dept. of Game and Fish. Montgomery, Alabama.

⁴ Iowa Conservation, Vol. III.

'Fins, Feathers and Fur'⁴ for March, 1920 contains an appeal from Harry J. LaDue for the extermination of "vermin" by the sportsmen. Everything which may destroy game is today "vermin," but the destruction of all this wild life may so upset the balance of nature that the game will go too before we realize the complicated interrelation between wild creatures with which we are interfering. Such work should be done only after most careful consideration by those who understand the problem. The statement that "the Crow is now everywhere regarded as one of the great menaces to song and game birds" is hardly supported by the reports. It is destructive locally to certain crops and should be dealt with accordingly, but in other places and other seasons it is unquestionably beneficial. The hue and cry against the Crow which has lately spread over the country seems to have been inspired by certain manufacturers of guns and ammunition more than by anyone else. 'Bluebird'⁵ in its March issue takes up the cudgels for the Crow just as earnestly as the previous journal denounces him.

'California Fish and Game'⁶ tells of the arrest in that state of violators of the Migratory Bird Treaty all of whom were fined substantial amounts. There is also an account of the efforts to rid San Diego of the English Sparrow which promises to be successful as the number now remaining is estimated not to be over 100. The Illinois Audubon Society has published another of its attractive 'Bulletins'⁷ for the spring of 1920, which contains an admirable commentary on the State game laws, and many notes and reports on bird study.

A Fascicle of Papers on British Economic Ornithology.—All of the articles here reviewed are by Dr. Walter E. Collinge who is giving more attention to economic ornithology than any other of his countrymen. Two of the papers were published in the new 'Journal of the Wild Bird Investigation Society,' Dr. Collinge, editor, which is devoted to the preservation and to all other interests of British birds. One¹ of these is general in nature, calling attention to the close relationship of birds to the welfare of agriculture, the greater attention paid to this matter in other countries and the desirability of doing more work on the subject in Great Britain. The Rook and the Pheasant are discussed in some detail as examples, respectively, of destructive and beneficial species, and a tabulation is given of the principal food items of 22 species of British birds which shows "that the sum total of their activities is distinctly in favor of the farmer and fruit-grower." The paper concludes by pointing out the great importance at the present time of aiding British agriculture

⁴ Minnesota Game and Fish Dept., St. Paul, Minn.

⁵ Bluebird, 1010 Euclid Ave., Cleveland, Ohio.

⁶ California Game and Fish Commission, Sacramento, Cal.

⁷ Illinois Audubon Society, 1649 Otis Building, Chicago, Ill.

¹ Wild Birds: Their Relation to the Farm and the Farmer. Op. cit. Vol. 1, No. 2, March, 1920.

in every way, and in making a special plea for investigations in economic ornithology upon which, alone, rational treatment of birds can be based.

Two of Dr. Collinge's articles relate to fish-eating birds, in one of which² it is pointed out that past statements on the matter have not been based on careful investigation, and preliminary results are announced of a study begun under the auspices of the Carnegie Trust for the Universities of Scotland. More than 3000 specimens representing 14 species have been examined, and the striking results are that "fish does not constitute the bulk of their food or anything like the major portion of it," that only two species, the Cormorant and the Shag, are purely fish-eaters, that only one other, the Common Tern preys chiefly on fish, and that 11 of 14s pecies consume fish to the extent of less than 20 percent of their food. The diet of the Black-headed Gull is treated in some detail, with a conclusion favorable to the bird.

The Kingfisher is the subject of the second paper³ on fish-eating birds; the bird's habits are sketched and a report is presented on the examination of stomach contents and food remains taken from nesting burrows. Averaging results from both sources, Dr. Collinge shows that 61.5 per cent of the Kingfisher's food consists of fish, 12.52 of which is trout. Stated in economic terms, 13 per cent of the birds food is taken at man's expense, 16 per cent contributes to human welfare and 71 per cent is neutral. An especially interesting feature of the analyses is the close agreement between the proportions of the principal items of food in the material taken from stomachs and in the disgorged indigestibles from the nest. A table of percentages exhibiting this relationship follows:

	From stomachs	From nests
Fish.....	63.5	59.5
Mollusks.....	4.0	4.0
Tadpoles.....	3.5	5.5
Injurious Insects.....	16.5	15.5
Neutral Insects.....	6.0	4.5
Crustaceans.....	3.5	6.5
Worms.....	1.5	1.5

Thus it is quite evident that digestion, (at least so far as it is carried by pellet-disgorging species) does not materially alter the relative volumes of food items. The reviewer believes that this condition extends to excrement also, at least in the case of nestlings, and elsewhere⁴ he has urged study of this evidence as to food-habits. The particular importance of Dr. Collinge's findings lies in the validity they give to analyses of materials which can be collected and studied without destruction of bird life.

² Sea-birds: Their Relation to the Fisheries and Agriculture. *Nature*, April 8, 1920, reprint, 7 pp.

³ The Kingfisher—Is It Injurious? *Illustrated Sporting and Dramatic News*, March 6, 1920, reprint, 1 galley.

⁴ Bul. 32, U. S. Biological Survey, 1908, pp. 23-24.

Dr. Collinge made good application of this method in his report⁵ on the Barn Owl, founded on the contents of 12 stomachs and more than 300 pellets. The investigation like all others relating to this species is emphatically in the bird's favor.

A study of 'The Food of the Nightjar (*Caprimulgus europaeus* Linnæus)⁶ is prefaced by a statement that this species had been greatly diminished in numbers by persecution because of its being considered a hawk and on account of general prejudice and superstition due to its nocturnal, hence little-known, habits. This is unfortunate as the species is almost exclusively beneficial. The case parallels that of the American Nighthawk and Dr. Collinge's conclusion like that of bird-lovers in this country, is that these birds should receive the maximum of protection.—W. L. M.

The Ornithological Journals

Bird Lore. XXII, No. 2. March–April, 1920.

A Bird Watcher in France. By Dr. Herbert R. Mills.

Field Sparrows. By F. N. Whitman.—Some excellent photographic illustrations of the nest and young

A Surprised Crow. By Verdi Burtch.—An amusing set of photographs.

An Unusual Horned Lark Family. By Frank Levy.—Eight eggs all of which hatched.

Migration Group Chart. By S. A. Hausman.—A good diagrammatic representation of residents, summer residents, etc.

The Plumages of North American Birds. By F. M. Chapman, Color plate by L. A. Fuertes.—The Arizona, Florida, California and Santa Cruz Jays.

Dr. A. A. Allen in the School Department and the Editor on the preceding page dwell upon the importance of accuracy in observation. The latter suggests the desirability of writing down an accurate description of all parts of the bird that may be under observation so as to compel the observer to gain a complete idea of what he sees while Dr. Allen urges that teachers do not hesitate to question the accuracy of children's identifications when they would seem to be unlikely. Too much emphasis cannot be placed upon the importance of this matter. The carelessness is not limited to children but to many of those whose observations are being published as part of the records of the National or State governments or of clubs and societies and we are forced to rely upon the rigorous pruning and questioning of an editor to save us from a mass of absolutely worthless records. The plan practiced by certain careful observers of

⁵ Some remarks on the food of the Barn-Owl (*Strix flammea* Linn.), Journ. Wild Bird Investigation Soc., Vol. 1, No. 1, Nov. 1919, pp. 9–10.

⁶ Journ. Ministry Agr., Vol. 26, No. 10, Jan. 1920, pp. 992–5.

never recording a bird that both have not seen and satisfactorily identified is excellent though of course it can only be practiced by two observers working always together. Confirmation of other observers is an excellent feature and the person who always works alone and always sees the largest number of species cannot help but arouse a doubt as to whether his enthusiasm has not carried him away.

Bird-Lore. XXII, No. 3. May-June, 1920.

Spring Thunder. By H. E. Tuttle.—Drumming of the Ruffed Grouse, with photograph of bird in action.

Some Robins' Nests. By W. F. Smith.—Curious locations, on the hub of a wagon, a stove-pipe, etc.

A Much-used Robin's Nest. By D. D. DuBois.—Six broods reared in the same nest during several successive years.

The educational leaflet deals with the Yellow-bellied Sapsucker with a plate by Sawyer and text by T. Gilbert Pearson. In the latter the author seems a little mixed in his migration dates; the swallows as a rule are early migrants in the autumn but the Swift instead of leaving with them as he states remains in the vicinity of New York about as late as does the Sapsucker.

Arthur A. Allen has an excellent article on bird song in which he adopts a scheme of notation somewhat like that advocated by A. A. Saunders in 'The Auk.' (1915, p. 173.)

An unfortunate newspaper article on a supposed Audubon collection of birds at Amherst College is reprinted in the Audubon department apparently without making any effort to determine its accuracy, while a line to Mr. Bangs, whose name appears in connection with the story, would have shown that, like many articles in the daily press, the whole thing was the result of some reporter's too vivid imagination.

The Condor. XXII, No. 2. March-April, 1920.

The Nesting Habits of the Alaska Wren. By Harold Heath.—Raises the interesting question as to the possible restocking of the island of St. George where the bird is found. The wrens are reported by natives to be abundant there some years and to disappear in others. As the Aleutian Islands, according to Oberholser, are populated by different races with the exception of Kodiak, then the repopulation must take place from this remote island, 700 miles away, but it is hardly conceivable that some representatives from the other nearer islands should not also come to the Pribilofs, if any such migration occurs. Mr. Heath prefers to think that one or more pairs have survived even in years when they seemed to have disappeared. In the winter of 1919, however, only a single pair of the birds could be found and it would therefore seem that the existence of the bird in the Pribilofs was precarious.

Autobiographical Notes. By Henry W. Henshaw. (Continued.)

Nesting of the Dusky Poorwill near Saugus, Los Angeles Co., California. By A. J. Van Rossem and J. H. Bowles.

Bryant Marsh Sparrow upon the Hills. By Jos. and J. W. Mailliard.
A Return to the Dakota Lake Region. By Florence M. Bailey. (Continued.)

Wilson Bulletin. XXXII, No. 1. March, 1920.

The Raptore of Nelson County, Kentucky. By B. J. Blincoe.

Notes on the Birds of Wakulla County, Florida. By John Williams (Completed in June number).

Bluebird Migrations. By Howard C. Brown.

A Synopsis of the Genus *Thryomanes*. By Harry C. Oberholser.—This revision recognizes the same races and species as the author's previous monograph of the genus with the addition of *T. albinuchus* (Cabot) placed in the genus by Mr. Ridgway, and the two races described by Grinnell, *T. b. catalinae* and *T. b. marinensis* with a new race, *T. b. ariborius* (p. 25) from Agassiz, B. C., which is said to range over the southwestern corner of British Columbia and adjacent Washington.

Wilson Bulletin. XXXII, No. 2. June, 1920.

List of Birds made during service in France and Germany. By C. C. Sanborn.

The Oologist. XXXVII, No. 3. March 1, 1920.

Bird Nesting Notes from Yates County, N. Y. By C. F. Stone.—Additional notes in May issue.

The Oologist. XXXVII, No. 4. April, 1920.

Bohemian Waxwings in Kansas. By P. B. Peabody.

The Oologist. XXXVII, No. 5, May, 1920.

Annotated List of the Birds of Brooke County, W. Va.—Anonymous.

Journal of the Museum of Comparative Oology. I, No. 3—4. March 31, 1920.—Like its predecessor this issue is largely devoted to articles by Mr. W. L. Dawson in exploitation of his Museum of Comparative Oology. There are, however, several special articles dealing with birds eggs, as follows:

An Oölogical Revision of the Alciformes. By W. L. Dawson.—This is a remarkable contribution in which the author first admits that he is not "deeply versed in the lore of taxonomy" and then states that the taxonomist is "all too easily satisfied with incomplete, or superficial evidence." Following this and some ridicule of the systematic worker he proposes that classification be based upon eggs alone. It is true that a knowledge of eggs is an aid to classification, and in certain groups has pointed to important relationships, just as have many other characters, but to insist upon using one character only, no matter what the character may be, is preposterous. There are resemblances between eggs that mean nothing from the phylogenetic point of view, just as there are resemblances in structure between birds which are only remotely related. Mr. Dawson's italicised "propositions" governing the matter we can hardly regard seriously.

Gaps in Our Knowledge of Eggs. By A. C. Bent.—Calls attention to certain species of North American birds the eggs of which are unknown or about which additional information is needed.

The Ibis. (11th Series), II, No 2. April, 1920.

List of the Birds of the Canary Islands, with detailed reference to the Migratory Species and the Accidental Visitors. Part VI. Appendix A—Appendix B. By D. A. Bannerman.

A Contribution to the Ornithology of the Island of Texel. By C. B. Teechurst.

A List of the Birds collected in northern Saskatchewan and northern Manitoba by Captain Buchanan in 1914. By J. H. Fleming [published also in 'The Canadian Field Naturalist' for December, 1919].

Notes on South African Accipitres. By C. G. Finch-Davis.—Treats of habits and distribution.

A Review of the African *Dicruridae* in the British Museum. By D. A. Bannerman.

A Nominal List of the Birds at present known to inhabit Siam. By Count N. Gyldenstolpe.

On the Type Specimen of *Chloephaga inornata* King in the British Museum, and some further Notes. By F. E. Blaauw.—The type specimen is really a young *magellanica* so that *inornata* King becomes a synonym of that species while the Black-banded Goose reverts to the name *C. dispar*.

On a New Species of Bower-bird. By T. Carter and G. M. Mathews. *Chlamydera maculata nova* Mathews. Under certain contingencies not clearly explained, Mr. Mathews suggests that the form be renamed *C. maculata carteri* (p. 499).

Bulletin of the British Ornithologists' Club. No. CCXLVIII. March 4, 1920.

Largely devoted to an address by E. C. Stuart Baker on 'The Value of Subspecies to the Field Naturalist.' Dr. Hartert, in commenting upon the address, stated that he objected to making supposed intergradation between two forms a criterion of the subspecies and cited the case of island races which were formerly regarded by American ornithologists as full species because of the impossibility of intergradation but which now they regard as subspecies. This action as we understand it has not been a change of opinion but rather the recognition of another kind of intergradation, *i. e.*, the overlapping of characters. While we do not think that the actual existence of intergrades should be required to establish a form as a subspecies, we nevertheless cannot admit subspecific relationship between forms separated by great distances and by other species of the genus, as for instance Dr. Hartert's listing of the Carolina Chickadee (*Penthestes carolinensis*) as a subspecies of an old world species.

The following new forms were described:

By Dr. Van Someren: from East Africa and Uganda: *Cercomela turkana* (p. 91) Turkana country, west of Lake Rudolf; *Eremomela badiceps turneri* (p. 92) Yala River; *E. elegans elgonensis* (p. 92) S. Elgon; *Sylvietta isabellina macrorhyncha* (p. 92) Tsavo; *Dryodromus rufifrons turkanae* (p. 93) Meuressi; *Prinia mistacea immutabilis* (p. 93) Nakuru Lake; *Hedydipna platyura*

karamojoensis (p. 93) Karamojo; *Cinnyris habessinicus turkanæ* (p. 94) Lake Rudolf; *Anaplectes jubaensis* (p. 94) Juba River; *Charitillus kaviron-densis* (p. 95) Kakamega Forest; *Dicrurus elgonensis* (p. 95) Lerundo; *Crateropus melanops clamosus* (p. 95) Naivasha; *Campothera teniolaema barakæ* (p. 96) Baraka.

By J. D. LaTouche: *Petrophila solitaria magna* (p. 97) a large race of *P. s. manilla* without type locality or mention of type specimen.

By A. DeCarle Sowerby: *Uragus sibiricus fumigatus* (p. 99) Tataschew, southern Siberia.

Bulletin of the British Ornithologists' Club. No. CCXLIX. March 31, 1920.

G. M. Mathews described six new forms of Australian birds.

C. Chubb proposed: *Dendrocinclora* (p. 107) new genus; type *D. guianensis* Chubb; *Vavasouria* (p. 107), type *Ampelis nivea* (Bodd.); *Calloprocnias* (p. 107) type *Casmarhynchus tricarunculatus* (Verr), also *Rhynchocyclus sulphurascens examinatus* (p. 108) Bartica, British Guiana; *R. poliocephalus inquisitor* (p. 108) Bartica; *R. flaviventris gloriosus* (p. 108) Quonga, British Guiana; *R. f. collingwoodi* (p. 109) Trinidad.

Bulletin of the British Ornithologists' Club. No. CCL. April 30, 1920.

E. C. Stuart Baker presented a revision of *Prinia sylvatica* recognizing three races and of *Pericrocotus peregrinus* and *P. brevirostris* recognizing five forms of the former and four of the latter. The following are described as new: *P. p. vividus* (p. 114) Attaran River, Burma; *P. p. pallidus* (p. 115), Larkhana, Sind; *P. p. saturatus* (p. 115), W. Java; *P. p. styani* (p. 117), Sechuen; and *P. speciosus fohkiensis* (p. 116), Yamahan, Fohkien.

H. F. Witherby publishes some notes on birds from southern Spain showing among other things that the true *Cisticola cisticola cisticola* must be restricted to this country and north Africa and proposes for the bird of the rest of Europe, Asia Minor and Egypt, *C. c. harterti* (p. 120). Platea, Greece.

An account of the seventh oological dinner is appended.

British Birds. XIII, No. 10. March, 1920.

Ornithological Notes from Norfolk for 1919. By J. H. Gurney.—Includes an account of the destruction of Rooks during migration.

On Some Results of Ringing Certain Species of Birds. By H. F. Witherby. (Continued in April.)

British Birds. XIII, No. 11. April, 1920.

Breeding of the Knot in Grinnell Land. By Col. H. W. Fielden.—Eggs found by the late Admiral Peary on June 26, 1909.

The Dutch and British Little Owls. By H. F. Witherby.—*Athene noctua mira* (p. 283) Limburg, Holland, is described as new; being darker than the bird from Germany, etc. The British bird was introduced from Holland.

Migration Notes from Bardsey Island, October, 1919. By F. W. Headley.

British Birds. XIII, No. 12. May 1, 1920.

The Common Gull Breeding on Dungeness Beach. By N. F. Ticehurst.—Excellent half-tones from photographs of bird at nest.

Some recent results of Ringing Certain Species of Birds. By H. F. Witherby.

Avicultural Magazine. XI, No. 2. February, 1920.

Notes on the Birds of the Balearic Islands. By Philip Gosse.

Avicultural Magazine. XI, No. 3. March, 1920.

Birds in the National Zoological Gardens at Washington. By R. W. Shufeldt.

Avicultural Magazine. XI, No. 5. May, 1920.

The Cry of Owls. By A. Trevor-Battye.

Cockatoo-Catching in Victoria. By Thornton Skinner.

The South Australian Ornithologist. V, Part 1. January, 1920.

The Birds of the Mallee. By Edwin Ashby.

New Subspecies of Emu Wren. By F. E. Parsons.—*Stipiturus malachurus halmaturina* (p. 15) Kangaroo Island.

Ornithological Nomenclature: Its History and Reason. By G. M. Mathews.

A Fortnight on Kangaroo Island, S. Australia. By J. N. McGilp.

Tori. Bulletin of the Ornithological Society of Japan. II, No. 8. July, 1919. [In Japanese]

On Some Specimens of Birds from Saghalin in the Sapporo Museum. By T. Momiyama.—*Cichloselys sibircus davisoni*, *Locustella ochotensis*, *Parus ater pekinensis*, *Chelidon rustica gutturalis*, *Surnia ulula pallasii*.

On the Migration of Some Common Species of Birds in the Vicinity of Seoul, Corea. By Y. Kuroda and J. Miyakoda.

On the Habits and Sexual Differences of the Himalayan Cuckoo. By M. Kawaguchi.

Migration and Habits of Swallows in Shikoku. By Y. Enomoto.

Notes on Some Birds from Iruma-gun Saitama. By T. Momiyama and M. Nomura. List of 132 species.

Tori. II. No. 9. April, 1919. [In Japanese.]

Notes on and Descriptions of the Flower-peckers of Formosa. By N. Kuroda.—*Dicaeum minullum uchidai* new race from Horisha, Nanto District. [This paper reprinted in English.]

On Some Birds from the Quelpart Island, Corea. By T. Mori.—Forty-nine species.

On the Sexual Differences of *Pseudotadorna cristata* Kuroda. By N. Kuroda.—[*Tadorna casarca* × *Querquedula falcata*?]

Notes on *Chelidon rustica gutturalis* and *C. daurica nipalensis*. By Y. Kanetsune.

Description of a New Subspecies of *Aplonis* from the western Micronesia. By T. Momiyama.—*A. kittlitzi kurodai* subsp. nov. Yap Island, western Carolinas. (This paper in English.)

Revue Francaise d'Ornithologie. No. 131. March, 1920. [In French.]

On the Song of Birds in Winter. By H. Darviet.

An Amateur Bird Guide for One Visiting Africa. By Dr. Millet-Horsin. (Continued.)

Inquiry on the Disappearance of the Sparrow. By A. Menegaux. (Continued in April.)

Revue Francaise d'Ornithologie. No. 132, April, 1920. [In French.]

Contribution to a Study of the Forms of *Bubo ascalaphus* of North Africa. By Louis Lavauden.

On the Bird Producers of the Peruvian Guana. By J. Berlioz. (Abstract of Coker's Report.)

L'Oiseau. Vol. I, No. 1. January, 1920. [In French.]

Birds of the London Zoo. By D. Seth Smith. Mentions such rare birds as *Irena*, *Comatibis*, *eremita*, *Scopus*, etc., and figures the two specimens of the Kagu now living in the garden.

Hummingbirds in Captivity. By J. Delacour. (Continued in February.)

Observations on Some Waeverbird Hybrids. By A. DeCoux.—Colored plate of *Zonogastria melba* × *Estrilda phoenicotis*.

Breeding of the Demoiselle Crane. By A. Touchard.

Ornithological Reminiscences of Belgium during the Occupation. By C. Dupond. (Continued in February.)

L'Oiseau. Vol. I, No. 2. February, 1920. [In French.]

The Golden-naped Woodpecker. By H. D. Astley.—*Chrysophlegma flavinucha*.

Descriptive Notes on Hummingbirds that have been imported living into Europe. By E. Simon.

Some Experiences in Crossing Peafowls. By F. E. Blaauw.

The Mikado Pheasant, *Syrmaticus mikado*. By J. Delacour.

L'Oiseau. Vol. I, No. 3. March, 1920. [In French.]

The Blue-tailed Pitta. By H. D. Astley.

Acclimatization in French West Africa. By Dr. Millet-Horsan.—Possibility of introducing Paradise-birds on the Ivory Coast. (Continued in No. 4.)

Some Collections of Living Birds in England. By J. Delacour.

Calliste in Captivity. By A. DeCoux.

L'Oiseau. Vol. I, Nos. 4-5, April-May, 1920. [In French.]

The Kite. By R. Reboussin.—With numerous pen sketches of attitudes.

Note on Three West African Birds. By A. DeCoux.

Hybrid of Peafowl and Common Fowl. By E. Trouessart.

A 'Feministe.' By C. Debreuil. A female Golden Pheasant exhibiting plumage of the male.

La Gerfaut. 10 Ann. Fasc. 1, 1920. [In French.]

Ivan Braconier. By L. Coopman.—With portrait.

Capture of a Red-necked Brant in Belgium. By A. Paque.—With colored plate.

The Birds of Devon (England) Compared with those of Belgium. By Th. Bisschop.

Der Ornithologische Beobachter. XVII. No. 5. February, 1920.

Influence of Meteorological Conditions on the Migration of the Woodcock. By Dr. L. Pittet. [In French.]

Summer Life of the Starling. By H. Fischer-Sigwart. [In German.]

Der Ornithologische Beobachter. XVII, No. 7. April, 1920.

On Zoological Nomenclature. By A. Hess.—The use of and between two specific names to indicate intermediates, the open end of the "V" being toward the species which it most resembles. [In German.]

Ornithological Notes on the Region of the Bosphorus. By A. Mathey Dupraz. [In French.]

The Call-Notes of Birds and their Significance. By H. Noll-Tobler. [In German.]

Der Ornithologische Beobachter. XVII, No. 8. May, 1920.

Report of the Swiss Central Station for Bird Ringing in Bern, 1917-1919. By A. Hess. [In German.]

Influence of Meteorological Conditions on the Migration of the Woodcock. By L. Pittet. [In French.]

Ornithologische Monatsberichte. Vol. 27, No. 3-4. March-April, 1919. [In German.]

Remarks on the Breeding Habits of the Swift (*Cypselus apus*). By W. Bachmeister.

Ornithologische Monatsberichte, Vol. 27, No. 5-6. May-June, 1919. [In German.]

Why do the larger Migrating Birds fly in the Wedge Formation? By W. R. Eckardt.

New East African Forms. By H. Grote.—*Macrosphenus albigula* (62), *Alseonax murinus roehli* (p. 62), *Phyllastrephus tephrolaemus usambarae* (p. 62), and *P. fischeri cognatus* (p. 63) all from Mlolo, Usambara.

Ornithologische Monatsberichte. Vol. 27, No. 7-8, July-August, 1919. [In German.]

Geographic Errors in Connection with Scopoli in Hartert's 'Vogel der Palaearctischen Fauna'. By G. Schiebel.

On the Nomenclature of the Genus *Phalaropus* Brissen 1760. By A. Laubmann.—Adopts the same nomenclature as already used in the A. O. U. Check-List of 1910.

On the Position of the Feet of the Bustard in Flight. By E. Hesse.—Holds them straight back under the tail. See also November-December issue for comment.

Ornithologische Monatsberichte. Vol. 27, No. 9-10. September-October, 1919. [In German.]

On Some Species of the Genus *Callocalia*. By O. Neumann.—*C. uropygialis heinrothi* (p. 110) Nusa, New Mecklenberg, is described as new.

Journal für Ornithologie. Vol. 67, No. 1. January, 1919. [In German.]

The Migration Routes of European Birds and the Results of the Ringing Experiments. By F. von Lucanus. See also note in No. 3.

A Contribution to the Ornithology of Munsterland. II. By H. Reichling.

Journal für Ornithologie. Vol. 67, No. 2. April, 1919. [In German.]

A Contribution to the Ornithology of South Venetia and the Coastlands. By E. Paul Tranz.

The Pleistocene Bird Fauna of Pilifszante. A Critical Review. By Geyr von Schweppenbergl.

Some Critical Remarks on the Palaearctic Corvidae. By J. Gengler.

Journal für Ornithologie. Vol. 67, No. 3. July, 1919. [In German.]

Annual Report of the Bird Observation Station at Rossiten. By J. Thenemann.

Should Connecting Forms be Named? By E. Stresemann.

On Some Birds from the Southeast Coast of German East Africa. By H. Grote. *Estrilda astrild litoris* (p. 301) Ruvo; *Lagonosticta rubricata reichenowi* (p. 301), Mikindani described as new.

An Ornithological Account of Sedan. By R. Zimmerman.

Journal für Ornithologie. Vol. 67, No. 4. October, 1919. [In German.]

Ornithological Observations in the South Ural Country. By H. Grote. (Continued in January.)

Birds of the Leipzig District. By E. Hesse.

The Fissirostres of Egypt. By A. Koenig.

On the Forms of *Turdus musicus*. By O. Graf Zedlitz.

Journal für Ornithologie. Vol. 68, No. 1, January, 1920. [In German.]

On the Eastern Forms of *Certhia*. By O. Graf Zedlitz.—*C. familiaris bachmeisteri* (p. 72), *C. brachydactyla neumanni* (p. 76), both from Slonim, Western Russia.

New Genera and Species of African Birds. By O. Neumann.—*Knestrometopon* (p. 77), type *Sigmodus scopifrons* Peters; *Suaheliornis* (p. 77), type *Phyllastrephus kretzschmari* Rehw. [here selected] *Sathrocercus* (p. 78) type *Bradypterus barakae* Sharpe, *Vibrissosylvia* (p. 78), type *Callene cyornithopsis* Sharpe. Also sixteen new races of *Glareola*, *Pternistes*, *Francolinus*, *Gymnobucco*, *Malaconotus*, *Lamprocolius*, *Onychognathus*, *Potoptera*, *Ploceus*, *Geocichla*, and *Erythropterygia*.

Berajah. pp. 55–62 ppl. XXVIII–XXXI. 1918. [In German.]

Deals with *Falco peregrinus*. Numerous plates of feathers.

Falco. XIV. No. 2. 'Schluss-nummer' for 1918. (April, 1919.) [In German.]

Ornis Germanica. III, April, 1919. Supplement to 'Falco.' [In German.]

A list of German birds with names according to the peculiar ideas of the author, O. Kleinschmidt.

Ornithological Articles in other Journals¹

L. McI. Terrill. Fall Migrants. (Canadian Field Naturalist, January, 1920.)—A review of the autumn migration at Quebec.

Criddle, Norman. Notes on the Nesting Habits and Food of the Prairie Horned Larks in Manitoba. (Ibid.)

Laing, Hamilton M. Lake Shore Bird Migration at Beamsville, Ontario. (Ibid. February, 1920.)—An annotated list covering the summer and autumn of 1918.

Morris, Frank. Belated Guests. (Ibid.)—Midwinter records of Brown Thrasher, Towhee and Goldfinch at Peterborough, Ontario.

Nichols, J. T. Wintering Snipe and Rainfall. (Forest and Stream, May, 1920.)—"Heavy precipitation the last half of the year is favorable to the presence of Snipe on Long Island at its close."

Anderson, R. M. The Brant of the Atlantic Coast.—A leaflet of the Canadian Geological Survey in the interests of the protection of these birds under the Migratory Bird Treaty.

Nelson, E. W. Federal and State Game Preserves. (Bulletin Amer. Game Protective Asso., April, 1920.)

Lawyer, George A. Results from the Migratory Birds Treaty Act. (Ibid.)

Allen, Arthur A. A Day with the Ducks on Lake Cayuga. (American Forestry, April, 1920.) With photographs of Canvas-backs and duck-shooting.

Burroughs, John. Bird Photographs of Unusual Distinction. With extracts from the writings of John Burroughs (Natural History, December, 1919.)—Following a review of his 'Field and Study.'

Allan Brooks Birds and a Wilderness. (Ibid.)—In France.

Nelson, E. W. Region too Alkaline for Crops. (Ibid.)—A further illustration of the folly of draining the Klamath Lake region, which is resulting in the ruination of the famous bird reservation.

¹ Some of these journals are received in exchange others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Grinnell, George Bird. A Chapter and Natural History in Old New York. (Ibid, January–February, 1920.)—With recollections of Audubon Park.

Worcester, Dean C. A Nesting Place of *Micropus subfurcatus* in Mindoro. (Philippine Journal of Science, December, 1919.)

Anderson, J. A., Rintoul, L. J., and Baxter, E. V. Occurrences of the American Wigeon in Scotland. (Scottish Naturalist, January–February, 1920.)

Baxter, Evelyn V. and Rintoul, Leonora J. The Wigeon as a Scottish Breeding Species. (Scottish Naturalist, January–February, and March–April, 1920.)

Macready, Prof. The Birds of Prince Edward Island. (Bull. No. 1, Prince of Wales College, Charlottetown, P. E. I.)—Reprinted from the 'Teachers Magazine', April 1916. A briefly annotated list in the form of a table.

Oberholser, H. C. A Synopsis of the Races of the Guiana Flycatcher *Myiarchus ferox* (Gmelin.) (Proc. Indiana Acad. Sci., 1918, pp. 304–308.)—Eight races recognized, none new.

Eifrig, C. W. G. The Birds of the Sand Dunes of Northwestern Indiana. (Ibid. pp. 280–303.)

Shufeldt, R. W. The Mounted Collection of Australian Birds in the United States National Museum. (Museum Work, 1920, pp. 212–218.)—From the author's account one might judge that the National Museum Collection of Australian birds was the most important in America while as every ornithologist knows the original Gould Collection containing the great majority of the types of this pioneer is at the Academy of Natural Sciences in Philadelphia where an almost complete exhibition series mounted by the famous Verreaux brothers has been displayed for many years.

Frowhawk, F. W. Birds Beneficial to Agriculture. (Economic Series, No. 9. Guidebooks of the British Museum (Natural History) 47 pp. 22 plates. An excellent review of economic ornithology in Great Britain.

Duerden, J. E. Breeding Experiments with North African and South African Ostriches, VI. Degeneration. (Bull. no. 7. 1919. Dept. of Agric., Union of South Africa.)—A continuation of the author's valuable reports on Ostrich farming. (Cf. also Nature, CV, pp. 106–108, 1920.)

Butterfield, E. P. The Common Wren. (Irish Naturalist, March, 1920.)—Roosting and in one instance breeding in the "male nests."

Gladstone, H. S. A Naturalist's Calendar, kept by Sir. William Jardine. (Trans. & Proc. Dumfriesshire and Galloway Nat. Hist. & Antiq. Soc., VI, pp. 88–124. 1919.)—Covering January 1 to May 31, 1829.

Philpott, Alfred. On the Occurrences of the Australian Coot in New Zealand. (New Zealand Jour. of Science and Tech., III, pp. 55–56. 1920.)

Donald, C. H. The Birds of Prey of the Punjab. III. (Journal of the Bombay Nat. Hist. Soc. XXVI, pp. 826–835. 1919.)

Whistler, H. Some Birds Observed at Tagoo, near Simla, [India]. (Ibid pp. 770-775).—Fifty-eight species listed.

Stuart-Baker, E. C. The Game Birds of India, Burma and Ceylon. Part XXVII. (Ibid. pp. 705-715.)—Deals with *Tragopan satyra*.

Chubb, E. C. A Skeleton of the Dodo (*Didus ineptus*). (Annals of the Durban Museum II, pp. 97-99 with plate.)—This specimen obtained by the Durban Museum from the heirs of E. Therioux of Mauritius, is more complete than any of the other known specimens, possessing the tail bones intact. The other Dodo remains according to the author are: four mounted skeletons in the museums of Cambridge, England, British Museum, Paris and Mauritius; a foot and head at Oxford, England, being remains of a mounted specimen destroyed by moths in 1755; a foot in the British Museum and a head at Copenhagen.

Longinas Navas, R. P. Birds of Aragon. (Revista de la Academia de Ciencias exactas, fisicequnicas y naturales de Zaragoza, III, pp. 8-69.)—The author's unique policy of changing the generic name to avoid tautonymy instead of the specific as has usually been done by those who refuse to use tautonymic names, results in some new generic names which of course become synonyms viz: *Melanopica* (p. 15) for *Corvus pica*; *Pycnorhinus* (p. 20) for *Loxia coccothraustes* and *Ocelletus* (p. 56) for *Motacilla regulus*. [In Spanish.]

Bannerman, David A. On Some Rare Birds from the Belgian Congo collected by Dr. Cuthbert Christy. (Revue Zool. Africaine, VII fasc. 3, pp. 284-295. 1920).—Notes on 17 species rare or new to the Congo region. [In English.]

Schouteden, H. Contribution to the Ornithological Fauna of the Lake Region of Central Africa (Ibid. V, pp. 209-297. 1918.)—An annotated list of 554 species. [In French.]

Lonnberg, Einar. Notes on some interesting Birds from British East Africa. (Ibid V, pp. 97-102. 1917.)—The following are described as new: *Astur tachiro tenebrosus* (p. 99), *Londiana*, and *Zosterops Bayeri* (p. 100), Elgen. [In French.]

Schouteden, H. Note on a Woodpecker from the Congo. (Ibid. IV, p. 143. 1916.)—*Dendromus kasaicus* Dubois proves to be *D. caroli* (Malh.) with some plumage from another bird added. [In French.]

Dehaut, E. G. A Contribution to a study of the Vertebrate Life of the Islands of the Eastern Mediterranean, with special reference to Sardinia and Corsica. Paris, 1920. [In French.]

Godard, Andre. The Utility of Birds. (La Nature, No. 2386. 1919.) See also No. 2390 [In French.]

Rollinat, Raymond. The Breeding of the Horned Owl in Captivity. (Bull. Soc. Nat. Acclim. France, 1919. December, pp. 373-376) [In French.]

Schalow, Hermann. A Contribution to our Knowledge of the Bird Life of Various Battlefields. (Die Naturwissenschaften. CXX pp. 176-178.) [In German,]

Helfer, H. Bird Observations in Spring. (Zool. Anziger. XLIX, 1917, pp. 214-220.)—Gives dates for first song. [In German.]

Lebedinsky, N. G. On the influence of the method of feeding on the form of the lower mandible of Birds. (Zool. Anzeiger. September 20, 1918, pp. 36-41.) [In German.]

Demoll, R. The Flight of Insects and Birds. (Die Naturwissenschaften, XXVII, 1919, p. 480.) [In German.]

Additional Publications Received. Shufeldt, R. W. (1) Material for a Study of the Megapodidae (The Emu, July and October, 1919, and January 1920.) (2) Osteological and Other Notes on the Monkey-eating Eagle of the Philippines, *Pitheophaga jefferyi* Grant (Philipp. Jour. of Sci., XVI, No. 1., July, 1919.) (3) My Published Writings Second Installment (Medical Rev. of Rev., February, 1920.)

Hudson, W. H. (1) Adventures Among Birds. (2) Birds in Town and Village. E. P. Dutton & Co. N. Y. 1920.

Bulletin Charleston Museum. XVI, Nos. 2, 3, and 4. February, March and April, 1920.

Condor, The. May-June, 1920.

Philippine Journal of Science. XV, Nos. 5 and 6, XVI. No. 1, November and December, 1919, and January, 1920.

Proceedings of the Academy of Natural Sciences, Philadelphia. LXXI, Part III, 1920.

Proceedings of the Nova Scotia Institute of Science. XIV, Part 4. August, 1919.

Records of the Australian Museum. XIII. No. 1. March 16, 1920.

Revue Francaise d' Ornithologic. May, 1920.

CORRESPONDENCE**A. O. U. Luncheons**

EDITOR OF 'THE AUK':

One of the most pleasant features of our annual meetings is the lunch provided each day by the local committee as it gives those in attendance an opportunity for social intercourse which would otherwise be impossible. Many of our members have long felt the obligation we are under to the Delaware Valley Ornithological Club, the Nuttall Club, the Linnaean Society of New York, the Biological Society of Washington, and the members of various local committees who in the past have so cheerfully and silently contributed to the entertainment fund, but very few of us have fully understood, even with our own experience with the "high cost of living," how great a burden the more recent meetings have proved to the financial resources of our local committees.

The meeting of the American Society of Mammalogists in New York, last May, has shown that the lunch hour can be equally successful if the members pay for their own lunch and the feeling expressed on this point was one of general approval. Some of us, who from our geographical position cannot hope to return the hospitality of our fellow members, feel that on that account we are less embarrassed in suggesting that while the daily lunches be continued as heretofore that each one pay his own share as is already the custom in connection with our annual dinner.

Toronto, Ontario.
June 7, 1920.

W. E. SAUNDERS,
J. H. FLEMING.

[While we feel sure that the several local committees have been only too glad to entertain the visiting ornithologists at past A. O. U. meetings and are quite willing to continue to act as hosts at the luncheons, we realize that there is a more serious factor involved in this matter which directly affects the welfare of the Union. We must all realize that the influence of the Society would be greater if meetings could be held in a greater number of localities than is now customary, but the local expenses referred to by our correspondents, make it impossible to hold meetings away from the several centers of ornithological activity where there is a large resident membership. Increased attendance at the meetings which is especially desirable, tends further to aggravate this condition. We therefore feel that Messrs. Saunders and Fleming in their courteous and thoughtful note have opened up the way to an important innovation which may prove a lasting benefit to the A. O. U.]

EDITOR.]

Popular Nomenclature

EDITOR OF 'THE AUK':

The question of nomenclature has been so persistent recently here, there and everywhere, that I trust you will pardon me for touching on this controversial subject once again. It is not to the scientific names that I wish to make reference, but to the popular ones. Mr. Ernest Thompson Seton has recently expressed his views on this subject both in the columns of 'The Auk' (April, 1919, Vol. XXXVI, pp. 229-235) and in those of the 'Journal of Mammalogy' (Feb., 1920, Vol. I, pp. 104 & 105). Since Mr. Seton draws a clear line of demarkation between the scientific and the field student and presumably puts forth the views of the latter in his articles, I trust you will also find the space for the views of a scientific student. Not that I have ever before considered myself as such, for the majority of my published papers have been on field work pure and simple, but my views differ so fundamentally from those of Mr. Seton, that I now think I must belong to the class he designates as scientific.

Mr. Seton advocates a system by which popular names should be fixed entirely by popular taste and sentiment. It is an excellent principle but cannot be achieved, so it seems to me, if Mr. Seton's attitude be generally adopted. If a line must be drawn between the scientific and the field student, and in these days such a line seems more artificial than real, the problems of popular nomenclature can never be solved by an antagonistic attitude, but by one of frank co-operation. If the rules of priority, which have been carefully formulated by international experts are to be ignored by those, be they field men or otherwise, who personally disagree with them, a rational nomenclature, scientific or popular, can never be arrived at.

The reason I am re-opening the popular side of the question is this. In the last issue of 'Country Life' (March, 1920) there are two illustrated articles on the Sparrow Hawk. The one is entitled "Falconry" (pp. 68 & 69), the other merely the "Sparrow Hawk" (p. 156 et seq.). Throughout the articles no other name than Sparrow Hawk is given to the respective subjects, but on glancing at the photographs accompanying them one notices at once that each is dealing with a completely different bird. The first relates to the British Sparrow Hawk, *ACCIPITER NISUS*, the second to the American Sparrow Hawk, *FALCO SPARVERIUS*. The photographs are good and must be puzzling in the extreme to those geniuses of language who are ignorant of the existence of countries other than North America, whom Mr. Seton extols throughout his paper.

How the little falcon known in this country as the Sparrow Hawk ever came by this absurd misnomer is too late in the day to argue about. The fact remains and must be faced. If Mr. Seton's system is allowed to take its course such muddles as this must continue indefinitely. As he rightly contends the name is one now pleasing to and understood by the popular

mind and will have to remain in use. No efforts of the scientist can eradicate it. Yet there is a solution to the problem and a very simple one—by the use of the prefix “American.” There is no doubt that *ACCIPITER NISUS* was known by the name of Sparrow Hawk before *FALCO SPARVERIUS* received it and therefore by the rules of priority and common sense the latter should be modified to “American Sparrow Hawk.” It is the only way of saving such an absurd situation as has arisen in the last number of ‘Country Life.’ It is all very well to argue as Mr. Seton does “that the genius of language does not know of the existence of South America or concern itself with priority or with anything but getting the idea into the mind and memory.” Such an argument is too restricted to be of value. The genius of language may devise the name of Sparrow Hawk, but surely it will not be too difficult for him to learn and remember that another genius of language in another country (even if he has to be informed of its existence) discovered this name a century or two earlier and applied it to a different bird and therefore the word American will have to be prefixed to his Sparrow Hawk to distinguish it from the original. Earlier in his letter Mr. Seton mentions the Robin and states without comment that “actually even the scientific lists give the bird as *American Robin*.” (The italics are mine). Here he takes an example in which the rules of priority have been tacitly acknowledged by the use of the prefix “American” and acclaims the result, but he then proceeds to deprecate this only possible way of arriving at a satisfactory popular nomenclature. The principles of priority may primarily concern the scientific student but they cannot be ignored by the field worker. They are fundamental. There is no doubt that the names now firmly fixed in the popular mind will have to stand, but there is no reason why in the case of the many birds that have names in use in other countries, if these latter have priority, the American species should not be differentiated by the use of the prefix “American.” It has been done in the case of the Robin. It should likewise be done in all other cases.

I feel that I am unduly trespassing on your space, but there is one other point to which I should like to call attention. Mr. Seton gives a number of very interesting examples of birds that have several popular names all well established in the districts in which they are respectively used. If standard books would give a list of these recognized names instead of attempting to eradicate them in favor of a single one and give to the one in most general use the most prominent place, the book would be of universal value. In a country the size of North America it is only reasonable to expect that a bird should have more than one popular name. Even in England, small as it is, many of the people in the north do not know what is meant if a southern name be applied to some of their commonest birds. As Mr. Seton points out, Doctor Elliot Coues hit upon this plan. It has been followed by one or two other authors, e. g., Mr. Bailey in his ‘Birds of Virginia’ and Mr. Taverner in his ‘Birds of Eastern Canada.’

If the scheme were generally adopted, the list being restricted to names that are really and truly well known, the genius of language should be taught to take his choice rather than to be encouraged to increase confusion by the invention of more names. The plan has been widely and successfully used in other countries. It should succeed equally well here.

I fear this letter sounds as if I had a quarrel with Mr. Seton. Far from it. He has, however, put his views strongly. I have followed suit.

WM. ROWAN (M. Sc., M. B. O. U.)

University of Manitoba, Winnipeg, April 4, 1920.

EDITOR OF 'THE AUK':

Various aspects of the English language nomenclature of the A. O. U. 'Check-List' have recently been given publicity by prominent ornithologists, and the desirability of some changes has been made apparent.

When the first edition of the 'Check-List' was being prepared, the terms "Junco" and "Vireo" were adopted, in preference respectively to the terms "Snowbird" and "Greenlet," as the result of an appeal to the readers of 'The Auk', made through its pages. The wisdom of the choice made at that time in accordance with the majority of the preferences expressed in answer to the appeal has been well proven in the succeeding years. Could not a similar appeal now be made in the expectation of equally happy results?

It is suggested that the five propositions stated hereunder, intended to apply only to the standard "common" names of the birds included in the 'Check-List,' be submitted to the readers of 'The Auk' for expressions of opinion, each proposition to be considered separately, and that any of them which may be favored by a majority of the replies received be applied in the revision of the "common" nomenclature of the 'Check-List.' While the writer personally favors the application of each and all of these propositions, he would make clear that he is not here directly urging their adoption, but merely their submission to the judgment of the entire personnel of the A. O. U.

Proposition 1. *Each species shall be given a name which shall be distinct and applicable to the species as a whole, and the names of the subspecies, if any, into which the species may be divided shall each consist of the name of the species with an appropriate modifying term prefixed.*

This is merely the logical application of trinomial nomenclature to "common" names. At present the English-language names of the 'Check-List' do not properly indicate the difference between species and subspecies and in this respect they are neither scientifically accurate nor practically convenient. We have "Yellow Palm Warbler" as an equivalent of *Dendroica palmarum hypochrysea* and "Palm Warbler" as an equivalent of *D. p. palmarum*, but we have no English-language equivalent of the species name, *D. palmarum*. The result is to contribute to what Dr.

Dwight has termed "the exaltation of the subspecies" and to prevent exact reference in English to a subdivided species without awkward circumlocution. Mr. P. A. Taverner, who has applied the principle of this proposition to the names used in his recent 'Birds of Eastern Canada,' suggests the extension of "Palm Warbler" to indicate the entire species and the adoption of the name "Interior Palm Warbler" for *D. p. palm-arum*, which is a fair example of the type of changes which would be brought about by the acceptance of the proposition.

Proposition 2. *Clumsy descriptive names shall not be introduced and, where such are already authorized, they shall be replaced by appropriate shorter names.*

This is but an expression of a tendency which has long been apparent. "Blue Yellow-backed Warbler" has given place to "Parula Warbler," "Bay-winged Grass Bunting" has yielded to "Vesper Sparrow," and we are well satisfied with the changes; why should not "Black-throated Green Warbler" be discarded in favor of "Vee Warbler," "Canada Sparrow" be substituted for "White-throated Sparrow," and similar changes take place where needed throughout the 'Check-List?' The acceptance of Proposition 2 would render much more satisfactory the application of Proposition 1.

Proposition 3. *Adjectival parts of names which give a wholly erroneous idea of the bird named shall be replaced by others more in keeping with the known facts.*

There does not appear to be any reason for retaining "Connecticut" Warbler, "Nashville Warbler," "Tree" Sparrow, and other poorly chosen terms, except the fact that they are now in use. Appropriate names authorized in these cases by the 'Check-List' would quickly become current and supplant the misnomers.

Proposition 4. *The name of a human being shall not be used as the English-language name of a bird, and any such names at present authorized shall be replaced by other appropriate terms.*

Even the coining of scientific names from the names of men is a yielding to human weakness which can be justified, if at all, only on the ground that a name is a name only and does not necessarily mean anything. This justification is not applicable to English-language names, each of which should mean much about the species to which it appertains. In the case of many existing bird names derived from human names there is no pretense of a real connection between the bird and the particular human being for whom it is named, but in any case the connection between a short-lived human *individual* and a *species* whose life is of indefinitely great duration must be relatively so small as to afford no sound basis for attempting to give the species in perpetuity the name of the individual. "Wilson's Thrush" has been happily replaced by "Veery"; why cannot "Wilson's Warbler" be bettered?

Proposition 5. 'Where a term is used as the name or the principal part of the name of more than one species it shall, in the case of each species concerned, be accompanied by a distinguishing modifier.

At present *Penthestes carolinensis carolinensis* is called "Carolina Chickadee" and *P. atricapillus atricapillus* is called simply "Chickadee." This may serve passably well where but one species of Chickadee occurs, but where the ranges of two species overlap it causes confusion and many departures from the English-language nomenclature of the 'Check-List.' It is to prevent such occurrences that an application of Proposition 5 is suggested.

It may be noted that, in the example cited, to revert to "Black-capped Chickadee," as is often done, would not be in accordance with Proposition 2. Some other suitable name, such as "Cheery Chickadee," could be decided on for *P. a. atricapillus*.

In their able handling of the scientific nomenclature of the 'Check-List' the A. O. U. Committee are guided by their Code, but no such Code exists for the English-language nomenclature, which should be arranged as far as possible in accordance with the wishes of the majority of the bird students in Canada and the United States. These are the people who use this nomenclature; their judgment concerning it can be trusted; and without their approbation it cannot remain truly standard. By submitting the above propositions, or others of similar import, to the readers of 'The Auk' for their decisions, the Committee will obtain for its guidance in preparing a new edition of the 'Check-List' the consensus of opinion of the great body of well-informed American ornithologists, bird students, and bird lovers.

HARRISON F. LEWIS

P. O. Box, No. 6, Quebec, P. Q., May 21, 1920.

[The foregoing communications on popular names open up a question of far greater general interest than that of technical nomenclature, to which so much space is devoted in ornithological literature, and deserve the most careful consideration. Fortunately we have not and cannot have a code covering the use of popular names. Any attempt in this direction, such as is suggested in Mr. Lewis's propositions 2-4, will merely create a set of "book names" which no one but certain pedantic writers will use. Popular usage makes our popular names and while they may sometimes be coined arbitrarily and meet with general acceptance this is rarely the case. As regards the attempts of the A. O. U. Committee in this direction the name "Vesper Sparrow" quoted by Mr. Lewis was a success because it was already in general use in defiance of the books; but "Snowflake" and "Dovekie" proposed at the same time were failures and were not taken up in popular usage, so that the former was rejected in the last edition of the 'Check-List' in favor of the former name "Snow Bunting" and the latter should similarly have reverted to "Little Auk." Mr.

Lewis must have, we think, much more faith in the power of the 'Check-List' than have its compilers if he thinks that it could influence general usage in such matters.

What we have said is applicable to all names, not only those denoting birds or other natural objects. We cannot enforce upon the public what the public will not have, as witness the failure of the advocates of "motion picture" as against "moving-picture," and we may see the day when "movie" will be the recognized word in our dictionaries.

Propositions such as Mr. Lewis advocates while all very well in theory would produce a set of English names but not a set of popular names, and the ornithologist who would be expected to use them surely has troubles enough as it is in the matter of names without adding to his burdens.

In these remarks it will be seen that I am in the main endorsing the attitude of Mr. Rowan and it would probably be well to follow his suggestion of giving several popular names in the 'Check-List' where there are several in general use, though the Committee would probably be criticised for errors of omission and favoritism if they made such a selection.

As to the addition of the word American to distinguish certain of our birds from English species bearing the same popular name, I cannot agree with Mr. Rowan. This practise was followed in the earlier editions of the 'Check-List' but was deliberately abolished in 1910 even in the case of the Robin. The reason for this action was that the Committee recognized in these names just such book-names as I have referred to above. Nobody thinks for a moment of calling our bird anything but Robin and we shall continue to call it so, all the check-lists and ornithologies to the contrary. It would seem quite as unnecessary to insist upon printing the name of our bird "American Robin" as it would to try to compel our British friends to call their bird "English Robin" whenever they refer to it. Americans will, it is true, use this name when they refer to the English bird just as the English will call our bird "American Robin" but to each in his own country the respective birds are simply Robins, and they will continue to be called so just as various identical household implements are given entirely different names by the English speaking people on the two sides of the Atlantic. The Sparrow Hawk case cited by Mr. Rowan is simply an illustration of editorial ignorance and distinctive terms should of course be used in print wherever ambiguity exists.

There is it seems to us more justice in the claim of some of our western ornithologists that the "Eastern" Robin should be so designated in contrast with the "Western Robin" on the grounds that one is no more "the" Robin than the other. If we are to have any book-names let them be of this kind with the understanding, however, that in popular usage the geographical prefix in each case is to be dropped.

Mr. Lewis's fifth proposition is well taken. Where we have two kinds of any group of birds inhabiting the same region the unadorned name rarely serves as a term for either one of them. "Chickadee" as he says

is not distinctive as compared with 'Carolina Chickadee' and where the two occur we have to use the qualifying term "Black-capped" for the former. This is done now in spite of the 'Check-List' and the sooner this name is incorporated in the volume the better. So too "Crossbill" which lost its qualifying name "American" at the same time that the Robin did, is unsatisfactory and ambiguous and consequently in popular usage and in not a few publications it appears, as it should, "Red Crossbill." So too "Water-Thrush" should be officially as it is popularly called "Northern Water-Thrush" and there are doubtless others. In some cases however, there seems to have been no ambiguity as "Palm" and "Yellow-Palm" Warbler but these may also be changed if it is thought better.

Mr. Lewis's proposition concerning the consistent naming of a species and its component sub-species has already been discussed in these columns. While granting the need of some collective heading such as he suggests we do not think what the use of a word in the singular for the collective concept embracing all of the subspecies of a species will be anything but ambiguous. The word "Song-Sparrow" and "*Melospiza melodia*" have been used so long, and are still used, to denote the eastern race alone that we cannot now use the same terms to denote the whole assemblage of Song Sparrows. A better plan and one which we hope to see adopted in the next edition of the 'Check-List' has been suggested: namely to use the plural name "Song-Sparrows" for the complex *Melospiza melodia*.

After all, as stated at the outset, popular nomenclature is radically different from technical nomenclature and we must follow popular usage rather than try to arbitrarily influence it, even though we be not consistent.

WITMER STONE.]

Procellaria vittata Forster is not Halobaena caerulea Gmelin.

EDITOR OF 'THE AUK':

In the 'Proc. Biol. Soc. Wash.,' Vol. 32, p. 201, Dec. 31, 1919, Mr. H. C. Oberholser has claimed that *Procellaria vittata* was given by Forster to the bird now known as *Halobaena caerulea* Gmelin, and as it was published prior to the latter it should replace it.

Apparently Mr. Oberholser's contention is based upon the information provided by myself in the 'Birds of Australia,' and as his conclusion is incorrect, I here re-state the facts as clearly as possible so that no future misapprehension may arise.

Forster accompanied Cook on his second voyage round the world as naturalist and his son George was with him as painter. The elder Forster, whose initials are J. R., considered himself entitled to publish the results of the voyage, but the Admiralty who had engaged him did not agree with that view when his engagement concluded and definitely for-

bade him to publish anything. He overcame that obstacle in a small degree by the publication of a book entitled 'Voyage round the World' which was issued under his son's name. A preface by the son tells of the "ill treatment" of the father by the powers that were.

Casually making notes of the birds met with on the voyage, G. Forster, in Vol. I, p. 91, 1777, mentioned "Blue Petrel, so called from its having a bluish gray color, and a band of blackish feathers across the whole wing." On p. 98, when Blue Petrels were again mentioned, a footnote (perhaps by J. R.) gives a Latin equivalent, *Procellaria vittata*. I concluded "the name cannot be accepted as of this introduction, as it is indeterminable."

Had Mr. Oberholser consulted Forster's work he might have found a stronger claim to the name on p. 153 when about Dusky Sound, New Zealand, in April, 1773, Forster wrote: "Here they found an immense number of petrels of the bluish species, common over the whole southern ocean,* some being on the wing, and others in the woods. . . . They have a broad bill, and a blackish stripe across their bluish wings and body, and are not so large as the common shear-water or mank's petrel of our seas." Mr. Oberholser concluded "there is, no doubt at all" what Forster called *vittata*, and this paragraph would suggest that he was right, but that the bird so called was *not* the one Mr. Oberholser decided. The broad bill mentioned is diagnostic of *Prion*, and is not seen in *Halobaena*. The two birds are similar with peculiar diagnostic and easily observed characters, the *Prion* having a broad bill and dark tips to its wedge-tail, the *Halobaena* having a narrow bill and white tips to its square tail. Consequently no general description could be valid unless the peculiar features were mentioned.

Why Mr. Oberholser ignored the detailed account given in Cook's account of the same voyage which I quoted in full, I cannot say, as there the matter was so clearly stated that *no* reader should misunderstand it. I may recapitulate shortly. Under date of October 16, 1772, Cook logged "were now accompanied . . . and small grey petrel less than a pigeon. It has a whitish belly, and grey back, with a black stroke across from the tip of one wing to the tip of the other. These birds sometimes visited us in great flights. They are southern birds; and are, I believe, never seen within the tropics, or north of the Line." On December 23, 1772, Cook reported "Mr. Forster, who went in the boat, shot some of the small grey birds before mentioned, which were of the petrel tribe, and about the size of a small pigeon. Their back, and upper side of their wings, their feet and bills, are of a blue grey color. Their bellies, and under sides of their wings, are white, a little tinged with blue. The upper side of their quill feathers is a dark blue tinged with black. A streak is formed by feathers nearly of this color, along the upper parts of the wings, and crossing the back a little above the tail. The end of the tail

* See page 91.

feathers is also of the same color. Their bills are much broader than any I have seen of the same tribe, and their tongues are remarkably broad. These blue petrels, as I shall call them, are seen nowhere but in the southern hemisphere, from about the latitude of 28° and upwards." Under date December 27, 1772 (p. 32) is written: "Some of the petrels (shot by Mr. Forster) were of the blue sort, but differing from those before mentioned, in not having a broad bill; and the ends of their tail feathers were tipped with white instead of dark blue. But whether these were only the distinction betwixt the male and female was a matter disputed by our naturalists."

J. R. Forster apparently had no doubt on the matter as in his Manuscript he named *Procellaria vittata* under date November 30–December 23, and gave the range as 'Habitat a Tropico capricorni in Circulum Antarticum usque, volant celerrime.' He fully described thereunder the *Prion*, describing his broad bill and the dark tips to the tail. On the date December 28, he added *Procellaria similis*, giving the character of the *Halobaena* and the range as 'Hab. in Oceano simillimum Proc. vittatae at examini Antartico circa gradum latitudinis 58° primam observata.' The former he called "The Banded Petrel" and the latter "The white-edged silvery Petrel."

This is not novel, as these descriptions were published in 1844 under the editorship of Lichtenstein and consequently "There is no doubt" what Forster called *Procellaria vittata*, but this assuredly was not the species now known as *Halobaena caerulea* (Gmelin) which Forster also fully described under the name *Procellaria similis*. It may interest Mr. Oberholser also to note that J. R. Forster's names were published, also as *nomina nuda*, in the 'Tagebuch Reise Südsee unter Cook,' 1781, p. 35, where *Procellaria similis* and *vittata* both occur.

Consequently if *Procellaria vittata* Forster were to be recognized as a valid name, it would apply only to the species commonly known as *Prion vittatus* (Gmelin) and no change save that of authorship would be necessary.

GREGORY M. MATHEWS.

Foulis Court, Fair Oak, Hants, England.

February 24, 1920.

NOTES AND NEWS

FRANK SLATER DAGGETT, a Member of the American Ornithologists' Union, died at Redlands, Cal., April 5, 1920, at the age of 65. He went to Riverside to attend the sunrise Easter services at Mount Rubidoux and shortly after returning to Redlands with members of his family and friends he was taken ill and died early Easter Monday.

Mr. Daggett was born at Norwalk, Ohio, January 30, 1855. He became interested in birds at an early age and was elected an Associate of the A. O. U. in 1889 and was one of the first advanced to the class of Members when that class was established in 1901. When first identified with the Union he was living at Duluth, Minn., but in 1895 he moved to Pasadena, Cal., where he remained until 1904, when he returned East and engaged in business in Chicago until 1912. He then took up his permanent residence in Los Angeles and became Director of the Museum of History, Science and Art, a position which he retained until his death. Under his management the Museum has developed rapidly until it has become one of the leading institutions of the kind in the West. It is perhaps best known on account of its wonderful collection of Pleistocene fossils obtained from the asphalt pits of the Rancho La Brea on the outskirts of Los Angeles. Excavations in these beds began in 1906 under the direction of Dr. John C. Merriam and continued with great success for several years. In 1913 the owner of the property, Mr. G. Allan Hancock, generously granted to Los Angeles County the exclusive privilege of excavating for a period of two years with the understanding that the specimens secured would become the property of the Museum where they now form the Hancock collection. These fossils constitute perhaps the largest collection of Pleistocene material in the world and in addition to sabre tooth tigers, ground sloths, elephants, mastodons and other mammals include the remains of about 60 species of birds of which the most remarkable are an extinct Peacock (*Pavo californicus*) and several peculiar vultures and eagles belonging to the genera *Teratornis*, *Cathartornis*, *Pleistogyps*, *Neophrontops* and *Morphnus*.

Mr. Daggett's contributions to ornithology appeared chiefly in 'The Auk' and 'The Condor.' He was not a voluminous writer and most of his papers comprised notes on the occurrence of rare or interesting species or observations based on his own field experiences. He was, however, a man of broad vision and occasionally expressed his views on general questions as exemplified by his notes on accuracy in local lists, the membership of the A. O. U., and the proper limits of the Check List of Birds. He was a man of charming personality, quiet, affable and tactful but at the same time forceful and a good administrator. For several years he served as Highway Commissioner of Los Angeles County and in 1916, when the asphalt beds of Rancho La Brea comprising a tract

of 32 acres were presented to the county for a park, to be known as Hancock Park, the work of development was placed under Mr. Daggett's direction. He was an active member of the Cooper Ornithological Club for 25 years and when Vice President of the Southern Division in 1900 his portrait was published in 'The Condor' (Vol. II, p. 9). In recognition of his ornithological work his name is now borne by two California birds (*Sphyrapicus v. daggetti* Grinnell and *Morphnus daggetti* Miller), but his greatest monument will always be his work in connection with the Museum and its collection of fossils from Rancho La Brea. He is survived by his wife, Mrs. Lelia Axtell Daggett, of Los Angeles, a daughter, Mrs. Paul Stuart Rattle, of Cynwyd, Pa., and two brothers who reside in the East.—T. S. P.

HORACE WINSLOW WRIGHT, since 1902 an Associate of the American Ornithologist's Union, died on June 3, 1920, at his summer home in Jefferson Highlands, among the White Mountains of New Hampshire. Born at Dorchester, Mass., June 21, 1848, the son of Edmond and Sarah A. (Hunt) Wright, he graduated from Harvard College in the Class of 1869. The year following, he entered the New Church Theological School, then in Waltham, where he completed his preparation for the ministry in 1873, and was at once made minister of the New Jerusalem Church (Swedenborgian) at Abington, Mass. In 1876, his decided literary tastes induced him to relinquish his ministerial work, and in 1878, he was made President of the Abington Public Library, an office which he held until 1892. Magazine-indexing and the revising of Latin translations, mainly theological occupied much of his time during the years from 1879 to 1896, and he prepared a catalogue of the Abington Public Library.

A summer's residence at Jefferson Highlands for five months of each year since 1882, gave him opportunity for a closer enjoyment and appreciation of Nature, an opportunity of which his more ample leisure in later years allowed him to make much avail. So arose his active interest in the observation of birds, a pursuit that became, in the last quarter-century of his life, an absorbing passion, leading him to devote much of his time to systematic rambles by field, wood and shore, eager to see and record the bird-life about him, finding in this a constant source of delight and profitable adventure. To his enthusiasm he added a painstaking care in observation and quickly developed skill and accuracy in field-study. In 1902, he became a member of the Nuttall Ornithological Club of Cambridge.

During these later years he spent the winter and spring months in Boston, when it was his almost daily custom to visit favorable spots of the near-by region and to keep an accurate record of the numbers and local movements of birds seen. Being much abroad and in widely varied areas, he was frequently able to note unusual birds, the records of which appear in sundry shorter communications to 'The Auk,' beginning in 1905, with a brief account of an Arctic Three-toed Woodpecker seen on successive days in Belmont.

The Boston Public Garden and Common,—a green sanctuary in the heart of the roaring city,—he discovered to be a favorable stopping-place for migrating birds; and for a period of years he kept an accurate record of the numbers and species seen there in the course of daily visits during the spring and fall. A summary of his observations here, he finally published in an attractive little volume entitled *Birds of the Boston Public Garden* (Boston, 1909),—a valuable contribution to the study of migration and local movements of birds. On these early-morning tours of the Garden, he was often joined by other bird-lovers—men and women, city-dwellers, whom he inspired with his own zeal to seek recreation and profit from a brief association with birds. His kindly spirit invited all interested to share with him in these walks, until of recent years it was a familiar sight to those passing betimes through the Garden, to see him leading an eager group of men and women from spot to spot, halting here and there to focus their attention upon some feathered mite, all unconscious among the trees or shrubs. Indeed, so many availed themselves of his friendly company on these occasions that he had almost become a Boston institution. Many will date their first knowledge of birds from these quiet-hour observation walks with Mr. Wright.

In 1911, he published a carefully annotated list of the 'Birds of Jefferson Highlands,' with notes covering a considerable period of years; and subsequently a valuable series of shorter contributions came from his pen, dealing chiefly with the occurrence of interesting species. Of special note, were two papers on the relative order in which the commoner species of birds begin and end their daily song-periods in the breeding-season.

Unassuming and gentle by nature, he yet possessed a quiet dignity and a clear sincerity which at once commanded the respect and confidence of all with whom he came in contact. Though he never married, he was of eminently social instincts, delighting in companionship and ever thoughtful of others. For him the fevered activity of modern life held no attraction; but in the serene and quiet atmosphere of scholarly pursuits he found life's satisfaction.

GLOVER M. ALLEN.

DR. THOMAS McADORY OWEN, Director of the Department of History and Archives, State of Alabama, died of apoplexy at Montgomery, Alabama, March 25, 1920. He was in the 54th year of his age, having been born at Jonesboro, Alabama, December 15, 1866. Dr. Owen was a subscriber to 'The Auk' and his name had been proposed for membership in the American Ornithologists' Union. He took a deep interest in natural history and as a result of this interest established under his Department a local collection of mounted birds in the State Capitol. His reputation as a historian was firmly established and at the time of his death he was working assiduously on a Memorial History of Alabama. In connection with his work on the history of the State he had planned to issue in his

Department a series of reports on the local natural history, the first of which is to be the 'Birds of Alabama,' by Arthur H. Howell of the U. S. Biological Survey. This is now in the hands of the printer and is expected to be published soon.

A. H. H.

DR. CHARLES GORDON HEWITT, Consulting Zoologist of the Department of Agriculture of Canada, who was elected an Associate of the Union in November, 1918, died of pneumonia at Ottawa on February 29, 1920. He was the son of Thomas Henry and Rachael Hewitt and was born near Macclesfield, England, February 23, 1885. His early education was received in the Macclesfield grammar school and later in the University of Manchester, where during his college course he took first class honors in zoology. In 1904 he was appointed by his Alma Mater assistant lecturer in zoology and two years later lecturer in economic zoology. In 1908 he organized a committee of the British Association for the Advancement of Science and the Board of Agriculture, known as the Economic Ornithological committee, for the investigation of the food of British birds, and began an experiment which proved successful in using nesting boxes to attract birds to an area near Manchester which was infested with the larch sawfly.

When only twenty-four years of age he received the appointment of Dominion Entomologist and arrived in Canada September 16, 1909, and in 1910 was elected vice-president of the Ontario Entomological Society. While his interests were primarily in entomology, Dr. Hewitt was a broad and unusually well-informed zoologist. He published a number of papers on entomology and economic ornithology, but his most important work was in connection with the treaty for the protection of migratory birds in the United States and Canada. It was largely through his diplomacy, energy, and enthusiasm that the negotiations in Canada were conducted so expeditiously and successfully. As Secretary of the Advisory Board on Wild Life Protection, organized in 1916, he took an active part in the broader questions of conservation and was interested in the establishment of bird and game refuges.

Dr. Hewitt was peculiarly well qualified for his special field of activity by his quiet, tactful manner, his broad vision, and his practical knowledge of economic zoology. His death at this time when his work was so successfully under way is an irreparable loss to the cause of conservation.—T. S. P.

DR. JOHAN AXEL PALMEN, of Helsingfors, Finland, a Corresponding Fellow of the American Ornithologists' Union, died on April 7, 1919, in his 74th year. He was born November 7, 1845, and when elected to the Union at its first meeting he was one of the youngest Corresponding Members.

Dr. Palmén devoted much attention to the fauna of Finland, on which he published a number of papers, but he was distinguished chiefly as a contributor to the subject of bird migration. His early papers were devoted mainly to birds and one of the first was his work on migration which appeared in Swedish under the title 'Om Foglarnes flyttningsvägar,' Helsingfors, 1874. It attracted little attention until it was translated into German two years later under the title 'Ueber die Zugstrassen der Vögel,' when it was widely noticed. An elaborate criticism by E. F. von Homeyer induced Palmén to publish an 'Antwort' in 1882. Two other extended papers should also be mentioned, namely his 'Geographische Verbreitung der Hühner, Sumpf- und Wasservögel im faunistischen Gebiete Finnlands,' which appeared in the 'Journal für Ornithologie' in 1876 (pp. 40-65), and his Report on the Migration of Birds published in German for the Second International Ornithological Congress held at Budapest in 1891. An English translation of this 'Report,' by C. W. Shoemaker, appeared in the Annual Report of the Smithsonian Institution for 1892 (pp. 375-396), and is the only one of his migration papers which is generally accessible to American readers. Dr. Palmén was a pioneer in defining the 'fly lines' or 'migration routes' of birds and the map which he published in his 'Zugstrassen' showing the principal routes in the Palaearctic region has been the cause of some misunderstanding on the part of those who have not taken the trouble to ascertain his real views. This misunderstanding is explained in his Report of 1891, which is an admirable summary of the work on migration done in Europe down to that date.

In honor of his 60th birthday in 1905 a 'Festschrift' was published in two volumes, containing his portrait and 18 papers and monographs by his students and colleagues.—T. S. P.

Dr. E. W. NELSON, chief of the U. S. Biological Survey, announces that the Bureau has assumed the work formerly carried on under the auspices of the Linnaean Society of New York by the American Bird Banding Association. In taking over this work he says that the Bureau feels that it should express the debt that students of ornithology in this country owe to Mr. Howard H. Cleaves for the devotion and success with which he has conducted this investigation up to a point where it has outgrown the possibilities of his personal supervision.

Under plans now being formulated this work will result in valuable information concerning the migration and distribution of North American birds which will be of direct service in the administration of the Migratory Bird Treaty Act, as well as of general scientific interest.

It is desired to develop this work along two principal lines:—first, the trapping and banding of waterfowl, especially ducks and geese, on both their breeding and winter grounds; and secondly, the systematic trapping of land birds as initiated by Mr. S. Prentiss Baldwin, the early

results of which have been published by him in the 'Proceedings' of the Linnaean Society of New York, No. 31, 1919, pp. 23-55. It is planned to enlist the interest and services of volunteer workers, who will undertake to operate and maintain trapping stations throughout the year, banding new birds and recording the data from those previously banded. The results from a series of stations thus operated will undoubtedly give new insight into migration routes; speed of travel during migration; longevity of birds; affinity for the same nesting-site year after year; and, in addition, furnish a wealth of information relative to the behavior of the individual, heretofore impossible because of the difficulty of keeping one particular bird under observation.

The details of operation are now receiving close attention, and as soon as possible the issue of bands will be announced, with full information regarding the methods to be followed and the results expected. In the meantime, the Biological Survey will be glad to receive communications from those sufficiently interested and satisfactorily located to engage in this work during their leisure time, for it is obvious that a considerable part must be done by volunteer operators. It is hoped that a sufficient number will take this up to insure the complete success of the project.

EVERYONE interested in the protection of birds will rejoice in the opinion of the Supreme Court of the United States upholding the legality of the Migratory Bird Treaty Act. The action came in connection with an appeal from the District Court of the United States for the Western District of Missouri, in a case already mentioned in these columns and seems to settle once for all the right of the United States to supersede the individual States in legislation regarding migratory birds.

The last paragraph of the opinion is worth quoting:

"Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject matter is only transitorily within the State and has no permanent habitat therein. But for the treaty and the statute there might soon be no birds for any powers to deal with. We see nothing in the Constitution that compels the Government to sit by while a food supply is cut off and the protectors of our forests and our crops destroyed. It is not sufficient to rely upon the States. The reliance is vain, and were it otherwise, the question is whether the United States is forbidden to act. We are of opinion that the treaty and statute must be upheld."

THE PERMANENT FUNDS OF THE A. O. U.—From time to time the Union has established several permanent funds for special purposes. In every case the principle with such contributions as may be received is invested so as to remain intact and the interest only is used for furthering the objects of the fund. The most important of these funds are: the Brewster Memorial Fund, the Research Fund, and the Publication Fund.

THE Brewster Memorial Fund, the most recent, is the gift of the friends of William Brewster to perpetuate the memory of one of the founders and former presidents of the Union by establishing a fund to encourage research in American ornithology. The sum of \$5200 received in 1919, has already increased to some extent and the proceeds will be awarded biennially in the form of a medal and an honorarium to the author of the most important contribution to the ornithology of the Western Hemisphere during the two years immediately preceding. This fund administered by a special committee and the first award will be made in 1921.

The Research Fund was established some years ago by a gift from Miss Juliette A. Owen of St. Joseph, Mo., one of the Life Associates of the Union, to encourage original research in ornithology. It now amounts to several hundred dollars but the interest will not be available until the total amount reaches \$5000. It is highly desirable that this fund should be increased at an early date so that the proceeds may become available for promoting ornithological work. Already applications have been received for assistance in special investigations which would be greatly stimulated if small grants could be made from this or some similar fund.

The Publication Fund comprises receipts from life memberships, bequests and special contributions. In 'The Auk' for January, 1920, the Editor has called attention to the immediate need of a fund of \$25,000 and in response to this appeal subscriptions of several hundred dollars in sums of \$100 or less have already been received. These subscriptions may be paid in Liberty bonds, or otherwise, in one payment or in several annual or semi-annual instalments. Not only is an adequate fund necessary to place the publication of 'The Auk' on a permanent basis and to issue check-lists, indexes and special bibliographies, but means should be provided also for publishing occasional memoirs, monographs and more extensive papers than have hitherto been attempted. At this time when the usual channels of publication are becoming restricted on account of the high cost of printing it is especially desirable that the A. O. U. should be in a position to meet the demands which are made upon it. As its permanent funds increase the Union will be able to broaden the scope of its work and to make more substantial contributions both to the development and diffusion of knowledge of ornithology.—T. S. P.

THE annual general meeting of the British Ornithologists' Union was held on March 10, 1920. Thirty-eight members were in attendance with the President, Dr. W. Eagle Clarke, in the chair. Forty new members were elected and Dr. P. R. Lowe was chosen to fill a vacancy in the Committee. The officers of the B. O. U. are not elected annually as in the A. O. U., so that there was no change. A new rule was adopted whereby a committee of nine be elected to report from time to time on the authenticity of the reports of any rare or hitherto unknown bird visitors to Great Britain, and another for the increase of the initiation fee and the price of 'The Ibis.' An amendment to the former proposition to authorize the com-

mittee to keep the British List up to date, as the A. O. U. Committee is supposed to do with the North American List, was voted down.

The report of the Committee was taken up almost entirely with the question of meeting the increased cost of 'The Ibis' which now amounts to £1000 a year. It is hoped that by the doubling of the initiation fee, making it four pounds, increasing the subscription price of the journal and materially augmenting the membership to avoid the necessity of increasing the annual dues which are now one pound five shillings. The question of publication is an international one and the members of the A. O. U. will find much food for thought in this report as the same problem is constantly before us in regard to 'The Auk.'

In making comparisons it must be borne in mind that while 'The Ibis' publishes more pages per year, there are more words per page in 'The Auk,' so that by careful count it will be found that the total amount of reading matter for some years back is nearly the same in each and the number of plates about equal, although 'The Ibis' has many more of its plates colored. The price of 'The Auk,' however, is less than half that of 'The Ibis.' Of especial interest to those who have the responsibilities of 'The Auk' upon them is the statement that the trustees of the British Museum contributed £250 toward the cost of publishing Museum articles in 'The Ibis' and it is hoped that this contribution will be an annual one. Not a few papers appear in 'The Auk' which exploit the collections of various of our Museums as well as State and National Departments, toward which they have contributed nothing. The possibility of assistance along this line is well worth considering.

THE January number of 'The Emu' contains an interesting account of the congress of the Royal Australian Ornithologists' Union, the first since 1914, which was held in Queensland and lasted a fortnight from September 23 to October 8, 1919. The meeting convened in Brisbane, where three days were devoted to the transaction of business, presentation of papers, and visits to points of interest in the vicinity. The week-end from Friday to Monday was given up to a camp out on Stradbroke Island in Moreton Bay, where 75 or more species of birds were observed. On September 30 about 40 members of the Union left for Dalby, about 150 miles west of Brisbane, and the next day went into camp in the Bunya Mountains. The camp was located about 30 miles from Dalby at an elevation of 3000 feet at the base of Mt. Mowbull, the highest peak in the range. The week from October 1-8 was spent in observing, collecting, and exploring the neighboring region and in the evening talks were given around the camp fire. More than 50 species of birds were observed among which Rifle Birds, Regent Birds and Satin Bower Birds were numerous near camp. A National Park of 13,540 acres has been established in the Bunya Range and the R. A. O. U. recommended that the entire range be included in the reservation. Immediately following the meeting steps were taken to have the National Park proclaimed a refuge for native

birds and a ranger appointed to guard the reservation. The congress decided to proceed at once with the preparation of a second edition of the 'Check-list of Australian Birds' and elected a committee of 12 members to undertake the work. The officers for the ensuing year include A. F. Basset Hull as president, Dr. J. A. Leach and C. A. Barnard as vice presidents, Z. Gray as hon. treasurer, and W. H. D. Le Souef as hon. general secretary. Dr. Leach was reelected editor of 'The Emu.' The next congress will be held about the first week in October in Western Australia.—T. S. P.

THE Swiss Society for the Study and Protection of Birds held its spring meeting on May 8 and 9 in Basel. The program included an afternoon in the Zoological Gardens, an address on migration at Basel and a social gathering in the evening. An excursion was arranged for the following day to take the members through the St. Jacob Reservation to Birsfelden on the banks of the Rhine and a tour of inspection of the Berlepsch thicket planted for a bird refuge by the Basel Ornithological Society.

The Swiss Society announces an excursion of a week in July or August to the National Park on the lower Engadine. This park established ten or twelve years ago is in the extreme eastern part of Switzerland, in the Canton of Grisons, and includes several mountain valleys and the intervening ridges where wild life of all kinds is carefully protected.

THE year 1920 may be considered the semi-centennial of the discovery of fossil birds in North America since it was in the spring of 1870 that the late Prof. O. C. Marsh published his first descriptions of extinct birds. It is true that some of the specimens had actually been collected prior to 1870, but descriptions of them had not been published except in the case of *Palæonornis struthionoides* Emmons, the avian relationship of which is now considered very doubtful. During the past 50 years about 125 species have been described and most of the type specimens have been figured. The types themselves are preserved in widely separated museums from New England to California and many of the specimens are small and very fragmentary. A suggestion has been made by the Union to the authorities of several museums that each institution which possesses type specimens of fossil birds should make ten sets of casts or plastotypes of such types for exchange with other museums so that each may have a complete series of type material of the fossil birds of the continent. This suggestion has received the approval of several institutions and at least one museum has already had casts made of the types in its collection. It is hoped that similar action will be taken by the others at an early date so that the project may be carried to a successful conclusion.—T. S. P.

A COLLECTION which is a combination of autographs and other samples of the handwriting of ornithologists, now representing about 450 individuals has been brought together by W. L. McAtee with very material aid

from Drs. C. W. Richmond and A. K. Fisher. The use of this collection is available to ornithologists visiting Washington and the services of Mr. McAtee to others who may have original labels or other bits of handwriting which it is desirable to identify. Contributions to the collection will be welcome and exchanges can be arranged with others having similar collections.

In a paper published in 'School Science and Mathematics' entitled 'Bird Study in the Mississippi Valley' Mr. Horace Gunthorp presents an interesting summary of the members of ornithological societies in the various states as well as information on the teaching of ornithology in the schools of the country.

We note that in the A. O. U. Massachusetts leads with 204 members while New York has 123, Pennsylvania 75, District of Columbia 63, and California 50. While in the Cooper Club, California of course leads with 278, Massachusetts, 40, New York 33, and District of Columbia 29. The Wilson Club has its largest membership in Illinois, 66, while Iowa has 51, Nebraska 48, Ohio 41 and New York, 23. The computation was made from the 1919 lists and have no doubt been changed somewhat by those of 1920.

DR. W. H. OSGOOD returned the last week in May from a brief but successful trip to Venezuela. Several hundred birds and mammals were collected chiefly in the vicinity of Lake Maracaibo and in the Sierra de Merida.

DR. ALEXANDER WETMORE, of the Biological Survey, sailed on May 29 for Buenos Aires to conduct investigations on the migratory birds which winter in southern South America. He expects to visit Argentina, Paraguay, Uruguay, and southern Brazil.

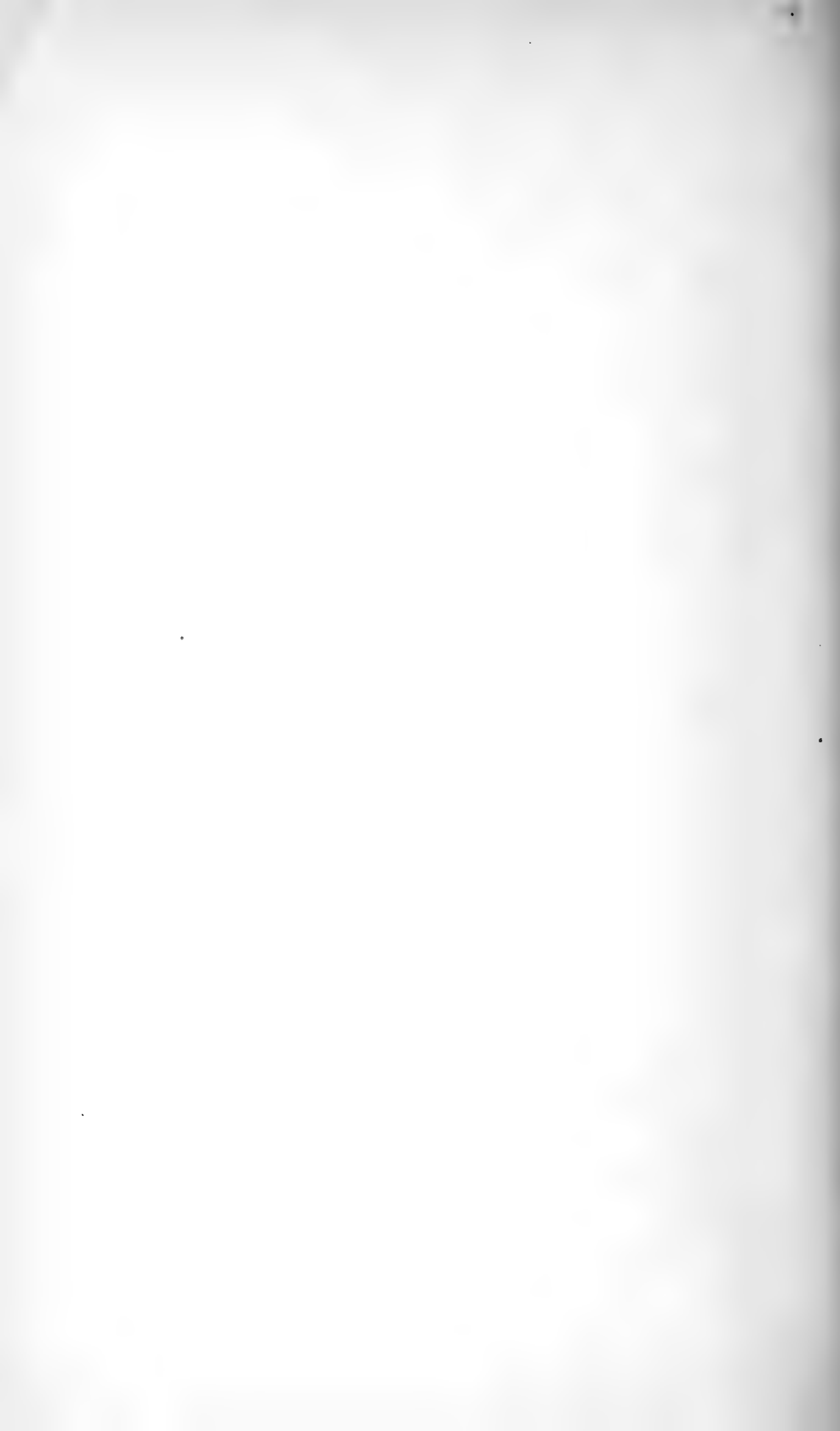
MR. JAMES L. PETERS sailed about two weeks earlier, also bound for Argentina, on a collecting trip for the interests of the Museum of Comparative Zoology.

IN connection with the meeting of the American Ornithologists' Union in Washington, D. C., this year, the Local Committee plans to hold an exhibit showing the history and development of zoological illustration as applied to birds, including original drawings, paintings and photographs. The pictures, which may be mounted in cards, but not framed, will be exhibited under glass in the Library of Congress (fireproof structure) where in exchange for facilities the exhibit will be held together a month or more. So far the consensus of opinion is that to keep the exhibit within bounds, each artist shall be limited to 6 original drawings or paintings and each photographer to 2 prints. This announcement is intended

as an invitation to all artists and photographers to participate in the exhibit and it is hoped to have a very general response so that the exhibit will worthily represent modern bird portraiture. Pictures need not be sent until fall. Transportation and postal or express insurance charges both to and from the exhibit will be paid when desired, and the safety of the pictures guaranteed while in the hands of the Committee. Communications on the subject may be addressed to W. L. McAtee, Biological Survey, U. S. Department of Agriculture, Washington, D. C.

THE By-Laws provide that nominations to the classes of Fellows and Members shall be made in writing, signed by three Fellows or Members, and delivered to the Secretary at least three months prior to the Stated Meeting. At present there are no vacancies in the class of Fellows but there will be opportunities for the election of 5 Members at the meeting in November. Nominations should be in the hands of the Secretary not later than August 5 and should be accompanied by a full statement of the qualifications of the candidate including a brief summary of his work and a list of his publications if any. Nomination blanks will be forwarded by the Secretary upon application.

THE Committee on Arrangements for the Meeting of 1920, recently appointed, includes John H. Sage, chairman; T. S. Palmer, secretary; W. L. McAtee, vice chairman; H. C. Oberholser, Frank Bond, Ned Hollister and B. H. Swales.



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Edited by Dr. Witmer Stone

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LIMICOLINE VOICES.

By JOHN TREADWELL NICHOLS.

THE Limicolæ or Shore Birds appeal to the imagination as do few other groups. Their wide migrations, flocking habits, and the uncertainty which attends their movements at all times contribute to the charm of their pursuit. Their calls, usually short, are often ringing and musical, and express well the temper of their haunts, marsh and shore, and so forth. These notes are generally diagnostic and stick well in the memory.

With these few introductory words I will say that the voices of these birds have been studied from several different view-points. The first has been to learn the difference between those of different species, as an aid primarily in identifying the species by ear; entailing a more or less careful study of the range of calls of each kind. The investigation with the greatest philosophic possibilities has perhaps been to determine, so far as possible, the significance of each note of a given species, the circumstances under which used, what it meant to the individual using it, and more especially to other individuals; in short, to get some idea of the "language" of the species. These two lines of study have led imperceptibly to a comparison of the notes of one species with those of another, and speculation on homologies (identification of the note of one species with the note of like derivation in a related species) and

analogies (determining what note of one species has the same *significance* with what note of another which may or may not be its homolog). One of the first things apparent is that the notes of species with similar habits are analogous, those of allied species more or less homologous, but often with very little analogy.

In view of the philosophic interest of the subject it is surprising how few records the literature of ornithology contains of careful observations made to interpret the language of birds and to determine its extent and precision. In Chapman's *Handbook of Birds of Eastern North America* (1912 ed., p. 60, etc.) we find summarized in a few paragraphs the principal facts about this language obvious to the field naturalist. Ordinarily no attempt is made to go beyond these, indeed to do so involves difficulties calling rather for experimentation than for casual observation. Most of the writer's observations on Shore Birds have been made under what are almost experimental conditions. More or less perfectly concealed in a blind, he has observed the birds, many of them in active migration, passing decoys (called "stool" in his locality). There are under such circumstances a limited number of simple acts open for them to perform, each rather easily interpreted, and each repeated over and over in the course of time by birds of the same and related species. It is conclusions from correlation of the birds' cries with their actions under these conditions that he hopes will make a slight step in advance into a difficult subject and be of value to later observers.

The Black-breast, Golden, Kildeer, Ringneck Plover, have each a characteristic diagnostic flight-note, respectively "pe-oo-ee," "que-e-e-a," "ke-he," "tyoo-eep." Though different all these notes have the same rolling character; in fact, are so much alike that they certainly have a common origin, as the birds have,—that is, are homologous. Also, they are used by each in the same way, have the same significance,—that is, are analogous.

Migratory Shore Birds in general have each a diagnostic flight-note analogous with the flight-notes of these Plovers. The flight-note of the Willet ("kiyuk") is sufficiently plover-like to be considered homologous, were the Willet a Plover. I hesitate to use the term "homology" in this case, however, and will therefore call it a note of the same group, and the Plover and Willet notes

flight-notes of group A (rolling notes). The Willet also has a note of less importance homologous with the "whew whew whew" of the Greater Yellow-legs, but lower pitched, which is not its flight-note. The "whew whew whew" of the Greater Yellow-legs is the flight-note of that species, a flight-note of group B (polysyllabic notes). The Greater Yellow-legs also has a more or less plover-like rolling note of group A, "toowhee toowhee toowhee." The commonest flight-note of the Lesser Yellow-legs, though frequently monosyllabic, is clearly homologous with that of the Greater. This intermediate condition in the Lesser Yellow-legs favors consideration of the monosyllabic flight-notes of the Krieker, etc., as group B rather than group A.

The Lesser Yellow-legs, Krieker and Semipalmated Sandpiper have short, snappy, flocking notes which may be considered of group C. There seems to have been an evolutionary tendency for notes of less importance to rise into prominence and replace notes of a preceding group as the diagnostic flight-note of the various species. Before judging of this hypothesis, it will be well to review the calls of the different species studied, which are taken up in the order of the A. O. U. 'Check-List.'

Northern Phalarope (*Lobipes lobatus*). On taking wing, this species utters a chipping note suggesting somewhat that of the Sanderling, either monosyllabic, "tchip" or "tchep," or in two or more syllables.

Woodcock (*Philohela minor*). This solitary, wood inhabiting more or less nocturnal species, is perhaps the most silent. A "twittering" as the bird takes wing is produced by the modified wing feathers. It is almost invariable as the bird takes wing and sometimes heard in full flight, but not as a rule. Species well concealed on the ground which trust to their concealment, and flush only at close range, throwing concealment to the wind as they do so, usually have an analogous striking note at that time, doubtless of value as a signal to others that may be near-by. It corresponds to the whirr of the Ruffed Grouse or the grunting of a startled Bittern, and thus may be mechanical, though usually vocal. Such sounds are very serviceable to the observer as identification marks.

The Woodcock has a well-known crepuscular song, which accompanies the nuptial performance, periodic Night-hawk-like "peents" on the ground, followed by rhythmical wing-twittering as the bird mounts in spirals into the air, followed by series of short, sweet descending whistles as it makes its earthward plunges. The Woodcock and Spotted Sandpiper are the only species that I know as breeders, and although probably most have something analogous with song, I must leave it to other more fortunate observers to describe them.*

Wilson's Snipe (*Gallinago delicata*). The Snipe, like the Woodcock, usually flushes at close range. It calls a harsh "scape," as it goes off, and this note is frequently given or repeated by it when in full flight. Two birds moving east to west over the meadows back of the beach at Mastic, Long Island, on the morning of August 23, 1919, were calling in this manner as they stopped to circle and then went on. As the bird goes out almost from under foot, the "scape" is at times replaced by a series of short hurried notes of similar character. Taken together these two notes are analogous with the wing "twitter" of the Woodcock. They are homologous, on the other hand, with the Woodcock's nasal "peent."

It is interesting to find in the Wilson's Snipe this imperfect differentiation of a note uttered at the moment of taking wing from one uttered when in or approaching full flight,—as it is a condition slightly different from the calls of other more social Shore Birds which trust comparatively little to concealment, take wing while danger is still at a distance with hurried minor notes, so soft as to readily escape notice, and have each a loud diagnostic flight-call of much service in their identification.

The harsh "scape" of the Wilson's Snipe at one end of our series, in keeping with the voices of unrelated marsh birds, frogs, etc., and the discords of close-by marsh sounds continually in its ears contrasts with the peculiarly clear mellow whistle of the Black-breast at the other end, with carrying power over the open distances of that plover's haunts. The connecting series, through

*See numerous references to the songs of northern breeding species in the volumes of 'The Auk.'

reedy calls of marsh loving species and ringing notes of those which spend more time in the open, leaves little doubt that there is some correlation between habitat and quality of voice. We will merely point out that carrying power of voice is an asset to the wide-ranging species of the open, and call the reader's attention to the interesting, if fanciful, remarks of Rhoads on the mimetic character of bird language in 'The American Naturalist' for 1889.

Dowitchers (*Macrorhamphus griseus griseus* and *M. g. scolopaceus*). The flight-note of the Dowitcher resembles that of the Lesser Yellow-legs but is recognizably different,—less loud and more hurried, usually suggesting the bird's name: "dowitch," or "dowitcher," sometimes of a single syllable. This call is subject to considerable variation. When used as a regular flight or recognition note I believe it is most frequently two-syllabled, clear and full. This at least was true of one or more birds observed on the north gulf-coast of Florida, September 6, 1919. One was certainly the Long-billed race, but I detected nothing unfamiliar in its voice and infer that that of the two races is the same. When the call becomes more abrupt and emphatic and the last syllable is multiplied it seems to indicate that the bird is excited rather than to have especial significance, "dowicheche."

A flock manœvered about the stool with single unloud low-pitched "chup"s (Mastic, Long Island, August 25, 1919). A low rattle from this species dropping down to alight (Mastic, May 18), and a startled "chee" from an extra tame Long-billed Dowitcher in Florida flushed by being almost struck with something thrown at it, completed, until recently, the writer's knowledge of the Dowitcher's calls, except that variations of the flight-note have not been fully described.

On September 28, 1919, however, I met with the Long-billed Dowitcher for the first time on Long Island. Two birds of this race stopping on a meadow where there was favorable feeding ground, when coming or going on the wing, when pausing from feeding to call to Yellow-legs which decoyed to them readily, or when standing alert and suspicious of me before flying, kept calling a short sharp "pip!" suggestive of one of the calls of the Solitary Sandpiper, though less loud and metallic. This note was

modified somewhat, perhaps occasionally to "pup" coming in to decoys, or to "peep" at other times. In flushing they sometimes had an unloud chuckling call, short or prolonged.

Except for recent experience with that race in Florida, inclination would be to consider these notes characteristic of the Long-billed Dowitcher, but the chances are there is no significant difference in the calls of the two races. The "pip" note of the Dowitcher corresponds, I take it, to the flocking "kip" note of the Lesser Yellow-legs. When flocks of Lesser Yellow-legs have been present and gone, a few birds still remaining tend to use the flocking note more than their numbers would warrant, for several days. The two Long-billed Dowitchers under consideration had likely been associated with members of their own kind immediately before the migration which brought them to Long Island. Previous unfamiliarity with the flocking note in the eastern bird is accounted for by its small numbers in recent years; we know it to have been highly gregarious when abundant.

Stilt Sandpiper (*Micropalama himantopus*). The common flight-note of the Stilt Sandpiper is very like the single "whew" of the Lesser Yellow-leg, but recognizably lower-pitched and hoarser. An unloud, reedy "sher" has been heard from a pair of birds when flushing (Long Island, July 26, 1919).

The resemblance of flight-notes of Dowitcher and Stilt Sandpiper to notes of the Lesser Yellow-legs is too striking to be passed without comment. They are species whose habits of flight differ least from it, and which are most generally associated with it in the same flocks, though their feeding habits are different. The resemblance of notes may be explained in several ways. One explanation would be of racial homology, that these are specialized descendants of the Lesser Yellow-legs not related to *Gallinago* which they resemble in form and near which they are conventionally placed. It is more reasonable to suppose the notes have been to some extent borrowed back and forth between the three. We are dealing here with *flight notes*, which in the two Yellow-legs certainly have shown a tendency to deviate rather than to come together, but then the flight-habits of those two are more contrasted. As the matter stands, the notes of the three (Dowitcher,

Stilt Sandpiper, Lesser Yellow-legs) are sufficiently different for identification and perhaps the very lack of close relationship in the birds has facilitated convergence of their calls.

The findings of W. E. D. Scott relative to acquisition by imitation versus inheritance of passerine bird notes has no real bearing on the subject matter of the present paper save possibly at this point. They make it not unreasonable to suppose an influence of the calls of customarily associated species upon one another.

Knot or Robin Snipe (*Tringa canutus*). The flight-note of the Robin Snipe is a low-pitched whistle, frequently in two parts, with a peculiar lisped buzz in it: "tlu tlu."

Krieker or Pectoral Sandpiper (*Pisobia maculata*). The habits of the Krieker are, in a sense, intermediate between those of the Wilson's Snipe and of other species to which it is more closely allied and resembles more nearly in habits. On the wing, it associates in flocks which migrate by day, often mixed with other species. On the ground it frequently scatters singly among the grass, and, trusting to concealment, does not take wing till approached very closely. Its notes are neither as hoarse and heron-like as the Snipe nor as clear and ringing as those of most other species, having a reedy character.

The flight or identification note analogous with the three ringing "whew"s of the Big Yellow-legs analogous and probably also homologous with the "cherk" of the Semipalmated Sandpiper, is a loud reedy "kerr," resembling the latter more than any other Shore Bird call.

In being flushed, the Krieker often has hoarse hurried cheeping notes, analogous with similar harsher notes of the Snipe.

Rarely in flight the "kerr" is varied into or replaced by a diagnostic near-whistled "krriu."

A chorus of short snappy "tchep"s or "chip"s has been heard from a flock of birds, alert and on the move. This call is probably analogous with the short flocking notes of the Lesser Yellow-legs. To my ear the Krieker's flushing note is more or less a combination of its flight-note and flocking note, and it is likely a combined expression of the mental states most commonly associated with these two. The flocking note communicates alertness to near-by

members of a flock, the flight-note is used most emphatically by singles that have become separated from their companions or are in active flight and disposed for companionship. On being flushed, the bird is signalling to possible companions, but as it has been feeding singly, concealed from such others as there may be, by the grass, their distance is uncertain.

White-rumped Sandpiper (*Pisobia fuscicollis*). The flight-note is a squeaky mouse-like "jeet," quite unlike any other Shore Bird note. This seems to be its only call in southward migration.

Least Sandpiper (*Pisobia minutilla*). The identification flight-note of this species is a loud diagnostic "kleep." It is occasionally varied to resemble somewhat the "weet" of the Spotted Sandpiper, or the flight-note of the Ring-neck, though it is neither whistled nor melodious. It is seldom used on the ground, but on August 9, 1919, at Mastic, I made an observation on its use by an alighted bird to call in another individual from the air. About four Kriekers, a couple of Solitary Sandpipers, and about five Least Sandpipers were alighted on a bit of dead meadow. One of the latter called repeatedly, a very fine high clear "kleep," apparently corresponding with a faint husky "kleep" from another somewhere in the distance, presumably a bird which presently appeared hovering and dropping down to alight with the others.

In flushing, a Least Sandpiper sometimes utters a string of short unloud notes with or without the ee sound, "quee-quee-quee-que," or "queue," to be followed almost immediately by a variation of the flight call, as it gets more fully underway.

The flight-note varies down to "che" and "cher," not readily, if at all, distinguishable from similar calls of the Semipalmated Sandpiper.

When a flock are up and wheeling about a feeding spot to alight there again almost at once, they have sometimes a confiding little note "chu chu chu chu," etc., with variations, which has also been heard from the first bird of a flock to alight, when already on the ground. This is suggestive of the "yu yu" note of the Lesser Yellow-legs, analogous with notes No. (6) or (7) of that species.

The Least Sandpiper has a whinny, a little less clearly enunciated than that of the Semipalmated, but almost identical with the same.

American Dunlin or Red-backed Sandpiper (*Pelidna alpina sakhalina*). The flight-note is an emphatic near-whistled "chu!" or "chru!" resembling some of the calls of Krieker and Semipalmated Sandpiper. The species very likely has other calls with which I am not familiar, as I have had little field experience with it.

Flushing note, of a single, a fine "chit-l-it" (Florida, 1919).

Semipalmated Sandpiper (*Ereunetes pusillus*). The Semipalmated and Least Sandpipers, our smallest species, are very generally found associated and some of their varied lesser calls are almost identical, the more definite ones, however, are absolutely distinct. It is noteworthy that the calls of the Least Sandpiper are less similar to the Krieker's than are those of the Semipalmated. Such dissimilarity between flight-notes of closely allied species seems to be the rule rather than the exception. We may note the difference between the calls of the two Yellow-legs, and that the note of the White-rumped Sandpiper is entirely different from that of allied Krieker and Least Sandpiper.

The flight-note of the Semipalmated Sandpiper is a rather loud "cherk," softer and less reedy than the analogous Krieker "kerr." It is commonly modified to a softer "cher" or "che," which, with much variation, becomes the conversational twittering of members of a feeding flock.

Soft, short, snappy "chip"'s are characteristic of flocks maneuvering about decoys, and less frequently heard from singles or two or three birds together,—analogous and homologous with the short flock note of the Krieker.

Hurried cheeping notes ("ki-i-ip") on being flushed, are suggestive of the same note of the Krieker. This seems to be a variation of the short, flocking note; at other times the Semipalmated Sandpiper flushes with what appears a variation of the flight-note, as "serup cherp cherp," (Mastic, August 23, 1919). I have heard the former from a bird on a meadow, loosely associated with Kriekers. This suggests the probability that borrowing of notes

between species which associate has had some part in the evolution of their calls, or that there is a tendency for certain analogous notes of such species to approach one another. That the analogous loud flight or identification note of each is so distinct indicates that the opposite tendency is at work, which in turn, supports the hypothesis that such calls have identification value for the birds themselves, as they will soon come to have for any field student who takes up the group. It seems scarcely probable that the short flocking note of Krieker and Semipalmated Sandpiper have any true homology with the analogous note of un-allied Lesser Yellow-legs, but from seeing Lesser Yellow-legs and Kriekers flocking together on meadows, equally favorable feeding grounds for each, I suspect some such borrowing may have taken place between these two.

A clear ringing whinny, from a bird in a flock or otherwise, on the ground or in the air, usually heard in the spring, is probably in some manner associated with the breeding season.

Western Sandpiper (*Ereunetes mauri*). Though some of its calls seem indistinguishable, in general the notes of this species (as studied on the north Gulf Coast of Florida, September 1919) are unlike those of *pusillus*. Its most common loud call is variable and may be written "cheé-rp, cheep!" or "chir-eep." This note has the "ee" sound found in the "kleep" of the Least Sandpiper, but has a plaintive quality suggestive of the note of the Sanderling, and it also suggests the squawk of a young Robin. Its closest resemblance to that of other small species is to the unloud "serup" heard from *pusillus* when flushing, and which varies into the regular flight "cherk" of that bird. It seems to be the corresponding flight-note of the Western Sandpiper, and is also used by a bird on the ground calling to others in air which alight with it, just as the flight "whew" of the Lesser Yellow-legs is so used.

Birds in flushing had a second dissimilar note "sirp" or at another time, "chir-ir-ip," which heard also in a medley of variations from a flock already on the wing, may be more or less analogous with the short flocking note of the Semipalmated Sandpiper, and suggested the notes of the Horned Lark.

Surf Snipe or Sanderling (*Calidris leucophaea*). The note of the Surf Snipe is a soft "ket, ket, ket," uttered singly or in series. I have heard it from birds taking wing but am not sure just how generally it is used or what its analogies are. This species is rather silent at all times.

The notes of the Shore Birds allied to the Tattlers have no apparent homology with those of the species so far treated. The Greater and Lesser Yellow-legs are the Tattlers whose voices have been most closely studied. A rather careful compilation has been made of the notes of these birds as heard in 1918, the same compared with earlier data, and conclusions checked up by observation the present year (1919).

Greater Yellowlegs (*Totanus melanoleucus*). The varied notes of the Yellow-legs are perhaps the most familiar of any, and frequent reference is made to them in discussion of other species. For convenience they are numbered serially.

(1) The yodle (a rolling "tóowhee tóowhee" etc.) is commonest in a flock, from birds remaining in one locality, not travelling. I think I have heard it from a single bird in the fog. It is characteristically given in the air, generally with set wings, by birds which seem to contemplate alighting. It advertises birds tarrying in one general locality, and has probably the function of *location* notice. It is doubtless homologous with the gather call of the Spotted Sandpiper with which it has little analogy.

(2) Loud ringing 3, "wheu wheu wheu." The characteristic cry of the species, spring and fall. It is commonly given by passing or leaving birds. It advertises the species,—and a change of policy in the individual according to its loudness. Analogous with notes of other species spoken of as *flight-notes* or identification notes; occasionally heard from an alighted bird. This call is subject to considerable variation, when heard from a bird about to drop down and join others feeding it is comparatively low-pitched and even, leaving or about to leave a feeding ground, highly modulated.

(3) Four "whew"'s, heard as follows, seem to have a rather definite significance: Low hurried descending, heard from a bird leaving companion. Short clear four, by a following bird. Loud

four, bird without intention of alighting, trying to flush decoys. This may be called a *recruiting* call.

(4) Twos, ("whew whew") seem to be characteristic of a *recruit*. A "gentle" bird which comes nicely to decoys is apt to call in twos when approaching and coming in.

(5) Rarely, in taking wing in the presence of an intruder, a single bird utters a string of unmodulated "whew"'s which breaks up into threes or fours as it goes off. This is likely a note of *protest*, which would be more common in the breeding season.

(6) Conversational murmuring, from a flock dropping in, expresses *companionship* and confidence.

(7) Conversational "chup" notes from birds about to alight, also heard from birds alighted, moving about at ease. The *alighting* note.

(8) Unloud "chup's" identical with the preceding but more hurried, given by a small flock of birds as they take wing. The *flushing* note.

(9) "Kyow,"—common in spring, only rarely heard in southward migration; probably associated with the breeding season; seems to express *suspicion*.

Lesser Yellow-legs (*Totanus flavipes*). When on the ground in flocks, the Lesser Yellow-legs is usually silent. The same is true frequently of single birds coming in. In the air it is more or less noisy and has two common distinct notes:—"whew" and "kip" or "keup," which seem to be used rather indiscriminately on various occasions and which vary into one another. Wandering singles and small companies seem to use the "whew" more, often double. The combination "whew hip" is frequent. From large companies, especially in uncertainty, one may hear a chorus of "kip's."

(1) The yodle probably corresponds in significance with that of the Greater Yellow-legs—*location*. It is certainly its homolog and scarcely, if at all, distinguishable from it.

(2) The "whew" is a regular *flight-note*, likely advertisement. Generally silent birds alighted, sometimes call an occasional single "whew" (at such times particularly soft and mellow) before others drop in to join them, as if in *welcome*.

When double, this note of the lesser Yellow-leg is at times clear and full, difficult to differentiate from that of the larger species, and apparently likewise characteristic of a "gentle" bird, which will join decoys, or others alighted.

(5) Whereas the "whew" note of the Lesser Yellow-leg is most frequently single and very seldom more than double, I have heard a variation of it in series from one of an alighted flock (Mastic, July 13, 1919) "hyu-hyu-hyu-hyu-hyu" etc. Presumably this was in protest at my presence, corresponding to the similar note of the larger species.

(6) Soft, unloud murmuring of a flock in chorus, "yu yu yu" etc., characteristically heard, as on August 10, 1919, from a flock moving leisurely over the meadows, after having been flushed, to shortly alight again, expressive of *companionship* and confidence.

(7) When dropping down to alight, often hovering over decoys, a flock of Lesser Yellow-legs has soft short "cup, cup, cup," etc. notes.

(8) At the instant of flushing almost the identical notes as above given hurriedly with more emphasis. This for the Lesser Yellow-legs is a rough analog of the cheeping note of the Krieker, but in view of the different habits of the two species, can not be said to be strictly analogous with same.

(10) An unloud chuckle or series of short notes suggesting a very distant Jack Curlew, heard sometimes, not very frequently, when one or more birds take wing. Should probably be considered a flushing note or signal to take wing. Seems like the attempt of one individual to reproduce the preceding, which is often from several birds of a flock.

(11) The "kip" is likely one bird calling to another close-by. It is typically a *flocking* note, otherwise used almost exactly as is note No. (2). A variation,—“keup,” with broader sound, approaching the “whew,” expressing *attention*, is frequent. It has been heard from a flock of birds which had been resting and bathing, just before taking wing (Mastic, September 15, 1918).

(12) An infrequent note of quite different character from the Lesser Yellow-legs' ordinary calls is very high and clear, "queep." It is subject to much variation, as "peép-quip," "eep!" but is characterized by the high "ee" sound. It has been heard from

birds alighted, more particularly when their companions, alarmed or for some other reason, move on, and is thought of as the *tarrying individual's* note. On August 17, 1919, I had picked up decoys preparatory to leaving a pool in the meadows when a single Lesser Yellow-legs came down to the pool calling a similar "kee-a" on the wing, though I was in full view. It went on without alighting with "whew" notes characteristic of the species. Probably this was an individual which wanted to stay, from a small company which had left the meadow.

(13) Wounded birds, on being pursued and captured, have a harsh scream of fear, "cheerp." I have noticed this from birds of the year in southward migration only, not from adults under the same circumstances.

Thus six of the ten notes assigned to the Lesser Yellow-leg are interpreted as analogous with six of the nine of the Greater, namely, *location*, *flight*, *protest*, *companionship*, *alighting* and *flushing* notes. With the exception of the flight-note these seem also strictly homologous, and little differentiated intraspecifically. The flight or identification note if homologous is divergent, as utility requires that it should be. It is homologous with the Greater's flight-note series—Nos. (2), (3), (4), and (5). Setting aside note No (9) of the Greater, likely associated with the breeding season, the two for which nothing to correspond has been found in the Lesser are *recruiting* and *recruit* calls, Nos. (3) and (4), differentiations of the flight-note. As a matter of fact a variation of the Lesser's flight-note is very close to the recruit note, and the condition may be summed up by saying that the flight-note of the Greater has to a greater extent than that of the Lesser been broken up into different notes of specialized application.

Setting aside No. (13), which the Greater probably also possesses, though I have not heard it, there are three notes of the Lesser for which nothing to correspond has been found in the Greater. Of these the flocking note, No. (11), correlates with its more gregarious habits. From knowledge of the voices of the two to date it seems that the more individualistic, intelligent and wary Greater has calls with more precise significance than the more social Lesser, something more closely approaching a true language, whereas the voice of the Lesser has undergone a longer evolution,

and it has acquired greater dissimilarity of calls. The specialized notes of the Greater are largely variations of the flight-note stem, which occurs in its simplest form in the Lesser, not its primitive form, however, if such is as we suppose, polysyllabic. The habits of the Lesser are less adaptively specialized in detail than those of the Greater, yet more specialized taken as a whole, a condition paralleled by the respective notes of the two.

In the majority of cases there is no difficulty in identifying either Yellow-legs with certainty from its ordinary louder notes; except that the analogous as well as homologous "whew whew" common with both and the rare occasions when the Greater uses a single "whew," require a keen ear to detect the difference in quality of voice. Nevertheless, just this last year (1919) there have been two instances in the field on Long Island, where with a little less training my ear would have assigned Lesser Yellow-legs calls to the other species. In both instances, the first in May, the second in late September, a small number of the Lesser Yellow-legs were associated with a larger number of the Greater, reversing the ordinary condition. My suspicions that in default of its own kind the Lesser was endeavoring to copy the calls of the other with which it was associated, aroused by the first observation, which was unsatisfactory, were confirmed by the second, a thoroughly satisfactory one. A flock of birds containing a couple of Lesser and perhaps five Greater Yellow-legs was flushed by a Marsh Hawk from a pool where my decoys were also placed. All went off to the north with the exception of one Lesser which promptly returned and alighted with the decoys. It called "whew" and "eep!" repeatedly, and flushed again with an unloud Jack Curlew-like series, all notes characteristic of the Lesser, and highly appropriate to the circumstances, then followed the direction the other birds had taken. Its notes now should have been a somewhat more abrupt "whew" or "whew-hip," or short "kip"s, had it been recently associating in flocks of its own kind, but to my astonishment they were "whew-whew" and "whew-whew-whew," trisyllabic! not at all abrupt and unusually loud for the Lesser; I think it was not my imagination which made them sound strained. The situation was not without its humorous side as a Greater Yellow-legs under similar circumstances would have been

apt to use four syllables, and if three, these highly modulated and ringing, the Lesser's three approaching most nearly that of a Greater about to alight.

I think I am correct in homologizing the ringing whistled voices of the Yellow-legs with comparatively sharp piping voices of Solitary and Spotted Sandpipers. The difference is related to the more wide-ranging and flocking habits of the former.

Solitary Sandpiper (*Helodromas solitarius solitarius*). The flight-note of the Solitary, "peep weep weep," is often difficult to differentiate from notes of the Spotted Sandpiper, but probably always differentiable. It is a cleaner-cut sound, less variable, more suggestive in accent than are those of the Spotted Sandpiper of the whistle of the Greater Yellow-legs. In August, 1919, several Solitaries were living on the meadows at Mastic, Long Island. They were frequently found feeding, flushed or observed making longer or shorter flights at no great heights. In these cases the note was double "peep weep," rarely single. When a bird is changing its grounds the same note is more often three, sometimes two-syllabled, and so given when definitely leaving a locality or by wandering birds which ordinarily fly high.

A quite dissimilar call, less frequently heard, is a fine "pit," "pit pit," or "chi-tit." This may have no significance other than being a reduction of the preceding, when the bird is less definitely on the wing, but seems to depend on there being another individual fairly close by. There is likely homology between it and the short flocking call of the Lesser Yellow-leg, and if correctly determined, a certain analogy thereto is also established, perhaps as much as possible with this non-social species. Of similar quality was a peculiar "kikikiki" from one of two birds in company which came to decoys nicely (Mastic, August 10, 1919), as they went out past me without alighting.

A third note, isolated "pip"'s, suggesting the call of the Waterthrush, is expressive of excitement when a bird is on the ground, as when just alighted.

Willet (*Catoptrophorus semipalmatus* races). The identification flight-note of the migratory Willet is a far-reaching, gull-like "kiyuk," repeated at intervals. On the breeding grounds in

spring there are several variations of this note, one "ki-yi-yuk," much like the loudest, most ringing call of the Greater Yellow-legs.

A less frequent note resembles the "whew whew whew" of the Greater Yellow-legs but is much lower pitched, not loud. It is homologous but not analogous with this Yellow-legs note. It has been heard from a bird hanging about a pool in the meadows.

"Ply-wly-wip, ply-wly-wip," corresponds to song; it is the common loud note on the southern breeding grounds in spring; its author most frequently poised on quivering wings above the meadow.

"Kuk-kuk-kuk-kuk-kuk" etc., in tern-like series from two mating birds is probably homologous with the *alighting* and *flushing* notes of the Yellow-legs, Nos. (7) and (8).

Loud high "kree-uk" infrequent in spring on the breeding grounds, suggests No. (12) of the Lesser Yellow-legs with which it may be homologous.

Spotted Sandpiper (*Actitis macularia*). The Spotted Sandpiper is the only species of which the calls, while nesting, are thoroughly familiar to the writer, and it should be borne in mind in comparing them with those of the others treated that the comparison is not a fair one; these others doubtless have breeding calls with which he is unfamiliar.

"Hoy, hoy, weet, weet, weet, weet weet weet weet" is a prolonged call frequently heard in the early part of the nesting season, in toto or in part, suggesting in that respect the songs of the cuckoos. It doubtless has value as *advertisement* or *location* notice and something the significance of a very generalized song. A series of loud "weet"s, heard also at other times of year, the most far-reaching call of the species, doubtless serves as location notice. Towards sunset on July 16, 1919, Oyster Bay, N. Y., the weather still and foggy, one at the shore was so calling repeatedly, I felt sure in an effort to locate another of its kind.

"Pip! pip! pip!" is a note heard between adult birds in the breeding season which seems to be of polite address, or possibly impolite, as it is almost identical in form with a note of protest by old birds when nest or young are threatened. This last is perhaps shorter and dryer. Something very like the former has been heard from an old bird when with her young.

A rolling note, "kerrwee, kerrwee, kerrwee," now loud, now very low and distant, has been heard from an adult with the evident purpose of assembling her young. Though with different, specialized application, it is pretty surely homologous with the location notice, No. (1) of the Yellow-legs.

Young birds that have taken refuge in the grass, presently if danger seems passed, begin to call "pip wip," perhaps the note most like that of the Solitary Sandpiper, to advertise to one another and their parents what and where they are. The "pit-wit-wit" frequently heard from adults as a note of departure may best be considered a variation of this one as also the "peet weet weet" or "weet weet" most frequent a little later in the season as little companies of birds start out over the water for longer or shorter distances. The third variation is the most characteristic note of the species, frequently heard from passing birds, and a very good analog of the flight-identification notes referred to under the transient species. From it is constructed the latter part of the song. The initial notes of same likely have some homology with the rolling note compared to No. (1) of the Yellow-legs.

An old bird, surprised near her brood and fluttering off playing wounded called "cheerp cheerp," a sort of scream as of pain and fear, doubtless the impression it was intended to convey, and a young bird, captured, cried "seep," indicative of its dire extremity.

Hudsonian or Jack Curlew (*Numenius hudsonicus*). The flight-note of the Jack Curlew resembles that of the Greater Yellow-legs from which it is rather easily distinguished, being less modulated and usually lower pitched. It commonly consists of four short whistles, but is frequently prolonged even into a trill. The more prolonged calls are usually the dryer, and seem characteristic of the noisiest birds, flying highest or with most uncertainty.

Black-bellied or Black-breast Plover (*Squatarola squatarola*). The flight-note of the Black-breast is a clear, ringing "pe-oo-ee" although shortened and otherwise varied at different times, this note is the only one ordinarily heard from single individuals or small flocks of this species. In general it may be said that the

diagnostic flight or identification note of Plovers is used more generally than in Yellow-legs and other species, for instance, and that they seem to have less variety of calls.

A second, flocking note, is a soft mellow "quu-hu" (from about 15 birds together, Florida, September 6, 1919) heard both in air and on the ground, and in chorus when a flock was flushed, circling and hovering in uncertain manner.

A dissimilar untold "cuk cuk cuk, cuk, cuk, cuk cuk cuk cuk" heard from a single bird alighted with decoys and running about (also Florida, September).

Golden Plover (*Charadrius dominicus dominicus*). The flight-note of the Golden Plover is a ringing "que-e-e-a" less clear and whistled than that of the Black-breast, with a suggestion of the Kildeer in it.

Kildeer Plover (*Oxyechus vociferus vociferus*). The common note of the Kildeer used in flight and at other times is a sharp "ke-he!" When the bird is flushed it is characteristically varied to "ki-i-he." About its breeding grounds, where it is very noisy, the note is commonly "ke!" or "kehe!"

Semipalmated or Ring-necked Plover (*Aegialitis semipalmata*). The flight-note of the Ring-neck is a short, whistled "tyoo-eep." The birds have a variety of lesser notes which are not so often heard, and most frequently in the spring. A little company of probably wintering birds (Florida, late March) called "kup, kup," as they were flushed and flew a few yards to alight again. The flight-note is sometimes replaced by rougher cacking notes in small flocks on the wing.

Piping Plover (*Aegialitis meloda*). The plaintive piping notes of this species are so characteristic of its breeding grounds, they are evidently associated with the nesting season, and perhaps correspond to song. At other times the birds are rather silent.

Wilson's Plover (*Ochthodromus wilsonius wilsonius*). The commonest note on the ground and on the wing (Florida, late March, apparently on breeding grounds) is a tern-like "quip," sometimes double "qui-pip." Less frequently, on the ground, a surprisingly human whistled "whip."

Ruddy Turnstone (*Arenaria interpres morinella*). The common flight-note of the Turnstone is a low cackle. This note is not very broadly used as flight-notes go, being most common from birds that are leaving the vicinity. A much rarer loud plover-like "kik-kyu" I have heard from a bird when coming to decoys or flying along the edge of favorable meadows.

The above is a pretty comprehensive resumé of the calls of the different species as definitely noted to date. Attempts to render each call by letters are at best unsatisfactory and probably no two people would do so in a like manner, but a field student of the birds will in most cases have no difficulty in following this classification of notes, and it is my only way to give any idea of their variety and character. It should be understood that it is only in the majority of cases that the calls correspond to circumstances to which they are assigned. No more could be expected in view of the doubtless rapidly changing psychic processes of the birds, of which we know nothing. The amount to which each note varies, and they vary into one another, should not be lost sight of. In the writer's opinion comparatively little of the birds' "vocabulary" is lost, however, by incomplete knowledge of these variations, whereas a great deal is lost by imperfect differentiation of inflection and tone. His hypothesis is that the form of the call, limited by the species to which the bird belongs, is correlated with numbers, environment and behaviour, especially present but also past or future; that its quality depends largely on emotion or state of mind, as alarm or confidence, restlessness, sociability, etc., etc. Less indication than presupposed, has been found of distinct and dissimilar calls corresponding to emotional states. A "note of alarm" has proved particularly elusive. Alarm, easily introduced experimentally, shows as determinant of the bird's actions, but the accompanying notes (if any) are such as accompany similar actions when it is obviously not alarmed.

One other thing is very striking; birds in the air are extremely sensitive to the calls of others on the ground, and only in a less degree to imitations of them. Birds on the ground are equally sensitive to the calls of others in the air, but pay astonishingly little attention to any imitated notes.

Whether one calls them language or not, the calls of other individuals of each kind of Shore Bird and associated kinds, are unquestionably an important part of the life of every member of the more social species, and one of the chief factors which direct its behaviour.

In the consideration of obscure details there is danger of omitting the obvious thing which would be of most interest to some readers. It is certain that an individual recognizes the flight-note of its own kind as such, as who can doubt who has had a Black-bellied Plover, too wary to come to decoys, yet circling round and round answering each imitation of its cry? As certainly in some cases birds recognize the flight-notes of other species for what they are, the Turnstone will decoy particularly well to the whistle of the Black-breast, a species of similar habits to its own, with which it likes to associate.

From the point of view of general contour and of habits (and taking the characters which separate the Limicolæ from other groups as criteria) the Plovers are our most generalized end, and that of *Gallinago* the most specialized end of the series here considered. Without assuming that this superficial viewpoint corresponds with the true philogeny of these birds in any way, it is to be expected that the notes, which are intimately related to habit, will be most readily classified in a parallel manner. The analogies between dissimilar notes and lack of analogy between certain evidently homologous notes of related species, implies that these calls are not stereotyped for each, but in process of change in a manner allied to that of human language. Studied mostly in migration, all species seem to have primarily a flight, identification or advertisement note, calls less loud and striking, and sometimes still louder and more ringing notes, allied to, but with less definite application than the identification note. It is my hypothesis that there is a more or less definite evolutionary tendency for lesser calls to replace the flight-note, which becomes still louder and far-reaching as it loses particular value and becomes less frequent.

By this hypothesis, the differing but evidently homologous flight-notes of the Plovers (Black-bellied, Ring-necked, Kildeer, Golden) correspond to the "kik-kyu" of the Turnstone, which

they resemble, and which is being replaced in the Turnstone as a flight-note by the characteristic rattle of that species. Similarly the Yellow-legs' yodle has been derived from a plover-like flight-note, and the Greater Yellow-legs and Jack Curlew flight-notes correspond to the Turnstone rattle.

The flight-note of the Willet seems to correspond rather to those of the Plovers than to those of the Yellow-legs. On the other hand the single "whew" of the Lesser Yellow-legs is evidently homologous with the "whew whew whew" of the Greater, and the flight-notes of the Krieker, etc., may as well correspond to it, or to that of Willet and Plovers.

ADDITIONAL DATA 1920

The notes of two Oyster-catchers (*Haematopus palliatus*), forced to take wing: "crik, crik, crik," etc., once a longer "cle-ar" interpolated, which suggested flight-calls of Willet and Black-breast Plover (North Carolina, April).

A Marbled Godwit (*Limosa fedoa*), flying towards decoys, gave a single unwhistled note, "hank," likely the flight-note of the species in migration. Alighted, it had a short unloud note, a goose-like "honk," especially when other Shore Birds swung by it (Long Island, August).

A single Dowitcher on the ground, when a flock of Lesser Yellowlegs were flushed a little way off, called a mellow plover-like "cluee?," and when these departed took wing with more ordinary Dowitcher calls and followed after. The peculiar cry suggested the *tarrying individual's* note of the Lesser Yellowlegs, with which it is likely analogous (Long Island, July).

When a flock of a half dozen Lesser Yellowlegs came to decoys, one bird alighted first, had a low-pitched unfamiliar "too-dle-hoo-hoo, too-dle-hoo-hoo, too-dle-hoo-hoo," before the others, still on the wing, came back and alighted with it. Though probably of similar derivation, this note was quite different from the yodle of the species, and is probably more of a gather call (Long Island, August).

American Museum of Natural History, New York City.

SUMMER BIRD RECORDS FROM LAKE COUNTY,
MINNESOTA.

BY CHARLES EUGENE JOHNSON.

THE records here presented were obtained chiefly during the summers of 1912, 1914 and 1915, while conducting expeditions sent out by Mr. James Ford Bell of Minneapolis, for the purpose of collecting specimens and obtaining photographic records of big game and other mammals in the northeastern wilds of Minnesota.

In order to accomplish the main objects of the expeditions only a small part of the time could be devoted to the bird life of the territory visited and therefore the records listed, far from complete, are such as were made as opportunity offered in the course of other work.

It had been my intention at another time to make a more thorough study of the birds of Lake County before submitting my list for publication. Because of a number of unforeseen developments, however, this plan had to be abandoned and since leaving the University of Minnesota I have thought it advisable to submit the list in its present form in the hope that it may perhaps serve as a basis for further work by others who may find opportunity to add to it and carry it nearer to completion.

So far as I am aware no list of birds from the region covered by these notes has before been published.

The territory concerned may be roughly defined as lying between White Iron Lake on the west and Perent Lake on the east; the Kawishiwi river and its northern fork or North Kawishiwi forming the northern and the Isabelle and Island rivers forming the southern boundary. The names of lakes, rivers, portages and other features are those given on the maps of the Federal and the State Forest Service. The Clear Lake mentioned is the one found in Township 63 N., and Range 10 W., and not the lake of the same name in Township 62 N., and Range 9 W.

Effort has been made to designate all localities where records were made with as much accuracy as brevity of description permits.

Podilymbus podiceps (Linn.). **PIED-BILLED GREBE.** The only record I have for this species is one for August 18, 1914, when a single individual was seen in the Isabelle River about a mile below Rice Lake.

Gavia immer (Brunn.) **LOON.** During the month of July Loons were occasionally seen or heard in Farm Lake and in Gabro and Bald Eagle lakes. During August and early September they were plentiful in the Isabelle Lake region, where we were encamped at that season.

Larus argentatus Pont. **HERRING GULL.** 1912: August 5, a Herring Gull was seen at Lake Bald Eagle. 1914: During the first week of July a pair of Herring Gulls was daily seen on a flat rock near the south shore of Clear Lake. By the time we had made our portage into this lake these birds had apparently left the locality, but on the rock was found a large nest of mosses, grasses and small twigs, which had the appearance of having been recently abandoned. In the month of August several Herring Gulls were seen on one occasion on a small rocky island in Lake Isabelle.

Mergus americanus (Cass.). **AMERICAN MERGANSER.** 1912: June 27, two newly hatched ducklings were taken from among a brood of eight or ten, on the North Kawishiwi River at the lower end of the long rapids below the fork. July 1, a brood, with the female, was observed near the North Kawishiwi-Clear Lake portage; August 29, an adult male and two females were shot on the Isabelle river a short distance below Isabelle Lake. 1914: One brood of young and several adult birds were seen during the first week of July, near "Dead Man's Rapids" on the North Kawishiwi; July 28, a female with a large brood of young somewhat more than half-grown was observed at the rapids at the upper end of Lake Gabro. 1915: Two broods of young were seen July 8, on the South Kawishiwi opposite Clear Lake. August 30, several small flocks, evidently separate broods, were observed on Lake Isabelle.

Lophodytes cucullatus (Linn.). **HOODED MERGANSER.** 1912: June 27, two adult females were shot on the North Kawishiwi near the Clear Lake portage trail; August 29, a male and female were shot on the Isabelle river midway to Lake Bald Eagle. 1915: August 7, a female with a brood of half-grown young was seen on the upper Perent river; August 30, a number of flocks of Hooded Mergansers, one of which contained 25 to 30 birds, were seen on the Isabelle river a short distance below Isabelle Lake.

Clangula clangula americana Bonap. **GOLDEN-EYE.** 1912: July 1, an adult female was shot on the North Kawishiwi river about three miles west of the Clear Lake portage; July 17, two females with broods were seen at the rapids of the Gabro Lake outlet; July 23, a female with a brood of nine young was seen on the South Kawishiwi opposite Clear Lake; August 20, an adult male was shot on the Isabelle river near Rice Lake, and another near Lake Isabelle. 1914: July 11, an adult female was seen at the Gabro Lake outlet; July 20, a young female was shot from among a brood of three accompanied by the female, near the long rapids of the North Kawishiwi river. 1915: July 9, a female with a small brood

was seen on the South Kawishiwi river opposite Clear Lake; July 16, a female with her brood was seen at the west shore of Lake Bald Eagle.

Anas platyrhynchos Linn. MALLARD. This species occurred in small numbers in all parts of the region visited. Females with broods were seen in July, 1914, along the southwest shore of Lake Bald Eagle, on a small stream entering this lake from the west, and on the South Kawishiwi river near the Clear Lake portage. 1915: July 25, a female with five young was seen at the Rice Lake outlet.

Anas rubripes tristis Brewst. BLACK DUCK. 1912: August 28, a flock of 13 Black Ducks was observed along the east shore of Lake Isabelle. August 7, 1915, a single specimen was seen on the upper sources of the Perent river.

Aix sponsa (Linn.). WOOD DUCK. A single specimen of this species was seen in July, 1915, along the Isabelle river about midway between Rice Lake and Lake Bald Eagle.

Botaurus lentiginosus (Montag.). BITTERN. The only Bitterns seen at any time were observed at the mouth of the Isabelle river. One was seen in that locality during the first week of August, 1913, another was seen July 31, 1914, and two days later, August 2, two Bitterns were seen at the same place.

Ardea herodias herodias Linn. GREAT BLUE HERON. This heron was common along the watercourses in all parts of the region visited. In 1912, a heronry of about a dozen nests was found on July 5, about three hundred yards south of the North Kawishiwi at the upper end of the large lake-like expansion occurring some distance above Farm Lake. This heronry was visited again, early in July, in 1914 and in 1915. My notes under date of July 22, 1914, state that "there is quite certainly another heronry located some distance north of the Kawishiwi at a point about a mile east of the long rapids; heard squawking and croaking in this direction, July 30."

Porzana carolina (Linn.). SORA. My only records for the Sora are for August 16, 1914, when one was seen along the Isabelle river just below Rice Lake, and another at a beaver dam on a small stream entering the Isabelle about a mile and a half below the lake mentioned.

Gallinago delicata (Ord.). WILSON'S SNIPE. August 12, 1912, a single individual of this species was seen along the Isabelle river at the second portage above Lake Bald Eagle.

Pisobia minutilla (Vieill.). LEAST SANDPIPER. August 11, 1914, two of this species were shot from among a flock of six on a mud-flat along the Isabelle about a mile below Rice Lake.

Totanus melanoleucus (Gmel.). GREATER YELLOW-LEGS. A single individual was seen September 2, 1914, on a small island at the east end of Lake Isabelle.

Totanus flavipes (Gmel.). YELLOW-LEGS. One was shot August 8, 1914, on the northeast shore of Lake Isabelle; another was seen in this locality August 8, 1915.

Helodromus solitarius solitarius (Wils.). SOLITARY SANDPIPER. During the month of August, 1914, this sandpiper was seen rather frequently in the region of Rice Lake and Lake Isabelle. August 9, 1915, one was seen on the northeast shore of Lake Isabelle and one along the lower Perent river.

Actitis macularia (Linn.). SPOTTED SANDPIPER. August 20, 1912, three specimens were shot along the Isabelle river just above the first rapids.

Canochites canadensis canace (Linn.). CANADA SPRUCE PARTRIDGE. 1912: August 5, several were seen on the Bald Eagle and Gull Lake Trail. 1913: In August two young specimens were shot on the trail mentioned; they were among a brood of several accompanied by the female. 1914: July 14, a female and eight young were seen in a sphagnum bog near the South Kawishiwi river just north of the Gabro Lake outlet.

Bonasa umbellus umbellus (Linn.). RUFFED GROUSE. Common throughout the region, but during the summer of 1915, it was observed that the species was unusually scarce. July 1, 1912, a female with a brood of eight or ten young was seen on the north shore of Clear Lake: August 5, a number of immature birds were seen in a bog one-half mile east of Lake Bald Eagle.

Cathartes aura septentrionalis Wied. TURKEY VULTURE. A single individual of this species was seen July 20, 1914, at the east end of the long rapids of the Kawishiwi river.

Circus hudsonius (Linn.). MARSH HAWK. In July, 1914, two hawks of this species were seen in the vicinity of Clear Lake, one at Rice Lake, August 22, and one at Lake Isabelle August 24. In 1915 two were seen at the mouth of the Isabelle river, July 14, and one at the west shore of Lake Bald Eagle on July 16.

Accipiter velox (Wils.). SHARP-SHINNED HAWK. Occasionally seen along the Isabelle river and adjoining territory. July 2, 1914, a female was shot on the North Kawishiwi-Clear Lake portage.

Accipiter cooperi (Bonap.). COOPER'S HAWK. August 14, 1914, one of this species was seen at Gabro Lake.

Buteo borealis borealis (Gmel.). RED-TAILED HAWK. July 16, 1914, a pair of Red-tailed Hawks was found nesting near the Gabro Lake outlet. The nest was situated in a tall dead birch, and the young were large enough to be plainly visible from the ground. August 4, 1915, two red-tailed hawks were seen along the Perent river.

Buteo platypterus platypterus (Vieill.). BROAD-WINGED HAWK. August 24, 1912, several were seen along the Isabelle river, at the second portage above Lake Bald Eagle, and August 4, 1915, a number were observed along the Perent river.

Falco columbarius columbarius (Linn.). PIGEON HAWK. August 19, 1912, a specimen was shot along the Isabelle river above the second portage; September 3, another was shot at camp at the first rapids of the Isabelle.

Falco sparverius sparverius Linn. SPARROW HAWK. In 1912, sparrow hawks were observed in the following localities: June 29, North Kawishiwi-Clear Lake portage; July 13, Gabro Lake portage; July 15, South Kawishiwi river; August 27, Lake Isabelle.

Pandion haliaetus carolinensis (Gmel.). OSPREY. July 18, 1912, a nest containing young large enough to be seen from the ground was found in a tall dead pine about a mile south and the same distance west from the forks of the Kawishiwi river. Both parent birds were at the nest. Three old nests were seen in the vicinity, the same pair of birds having probably nested in the locality for a number of years. On July 2 and 20 an osprey was seen at the long rapids of the Kawishiwi, and Aug. 14 a number were seen at Lake Gabro. In 1915 one was observed on the Perent river August 4, and one at the east shore of Lake Isabelle on August 31.

Bubo virginianus virginianus (Gmel.). GREAT HORNED OWL. Common. July 1, 1912, an adult female and one of her brood of three were shot on the south bank of the North Kawishiwi about two miles west of the Clear Lake portage. July 13 and August 3 adult birds were shot along the South Kawishiwi opposite Clear Lake and on an island near the southeast shore of Lake Bald Eagle, respectively.

Coccyzus erythrophthalmus (Wils.). BLACK-BILLED CUCKOO. One was seen on the North Kawishiwi-Clear Lake portage July 10, 1914; several had been heard since the first of the month. In 1915 one was heard July 3, in the same locality.

Ceryle alcyon alcyon (Linn.). BELTED KINGFISHER. In 1912 many Kingfishers were seen June 20, along the North Kawishiwi westward from the Clear Lake portage; on August 27 one was seen on the Isabelle at the second portage. My notes for August 9, 1915, state that one was seen at the east shore of Lake Isabelle, but that prior to that date only an occasional one had been seen in that region. After August 12, however, this species was seen daily up to our departure in September.

Dryobates villosus villosus (Linn.). HAIRY WOODPECKER. 1912: A specimen was shot June 24, in a mixed woods of spruce, pine and birch along the North Kawishiwi river near the long rapids; June 27 another was shot on the Clear Lake portage. 1914: A specimen was shot July 16, in the burnt-over hills bordering the South Kawishiwi near the Gabro Lake outlet. 1915: July 3, my notes refer to the hairy wood-pecker as numerous in the region of the Clear Lake portage.

Picoides arcticus (Swains.). ARCTIC THREE-TOED WOODPECKER. 1912: June 19, two specimens were shot among some tamaracs, one on the north shore of Clear Lake, the other on the shore of the North Kawishiwi. June 27 and July 26 a specimen was shot in dry open woods respectively on the North Kawishiwi-Clear Lake portage and on the bank of the North Kawishiwi opposite. 1914: July 16 one was taken on the burnt-over hills between the South Kawishiwi and the Gabro Lake outlet. 1915: Two were seen August 1 in open woods on the first portage of the Isabelle above Rice Lake.

Sphyrapicus varius varius (Linn.). YELLOW-BELLIED SAPSUCKER. July 1, 1914, a Yellow-bellied Sapsucker which evidently had nestlings was observed making frequent visits to a hole in a dead poplar on the east shore of White Iron Lake. July 5, 1915, a nest with young about half grown was found in the same locality:

Phloeotomus pileatus abieticola (Bangs). NORTHERN PILEATED WOODPECKER. June 18, 1912, one was seen on the North Kawishiwi-Clear Lake portage, and June 20 one was observed on the north shore of Clear Lake. During the remainder of June the species was seen occasionally along both the north and south forks of the Kawishiwi. In July, 1914, a specimen was shot at camp on the south fork near the Gabro Lake outlet.

Colaptes auratus luteus Bangs. NORTHERN FLICKER. 1912: June 12 and 22, Flickers were seen in the vicinity of the Clear Lake portage, and on the latter date a nest was found in this locality. 1915: July 3, two were seen on the Clear Lake portage, and on July 30 and August 4 several were seen respectively at Rice Lake and at Lake Isabelle.

Antrostomus vociferus vociferus (Wils.). WHIP-POOR-WILL. A single specimen was seen July 19, 1915, at the first rapids of the Isabelle above Rice Lake.

Chordeiles virginianus virginianus (Gmel.). NIGHTHAWK. Abundant in the latter part of June and in July along the north and south forks of the Kawishiwi. July 8, 1914, two well edged young were found on the banks of the north fork near "Dead Man's Rapids," and in a nearby locality a third young one of about the same age was found. These young lay on a scantily moss-covered and stick-strewn rock outcrop in a district that had been burned over some years before.

Archilochus colubris (Linn.). RUBY-THROATED HUMMINGBIRD. July 13, 1914, one was seen at the first rapids of the Isabelle above Rice Lake; a number had been seen earlier in the month in the territory bordering the north and south forks of the Kawishiwi, August 31, 1915, a hummingbird was seen at camp on the east shore of Lake Isabelle.

Tyrannus tyrannus (Linn.). KINGBIRD. Frequently observed in June and July along the White Iron and both forks of the Kawishiwi rivers. June 20, 1912, a nest with four eggs was found along the North Kawishiwi half a mile east of the Clear Lake portage. July 26, 1915, a kingbird was seen along the Isabelle at Rice Lake.

Sayornis phoebe (Lath.). PHOEBE. Frequently seen along the South Kawishiwi in July, 1914; a young specimen was shot July 23. July 8, 1915, a female with young able to fly was seen on the Gabro Lake portage.

Nuttallornis borealis (Swains.). OLIVE-SIDED FLYCATCHER. In July, 1912, and 1914, this flycatcher was frequently seen and heard along the north and south forks of the Kawishiwi in the Clear Lake region; a specimen was shot August 8, 1914, on the Isabelle river above the first rapids. July 6, 1915, the Olive-sided Flycatcher was again heard in the Clear Lake region.

Myiochanes virens (Linn.). WOOD PEWEE. June 18, 1912, one was seen on the Clear Lake portage. In 1914 it was occasionally seen and heard along the South Kawishiwi during the month of July; on July 4 one was shot on the North Kawishiwi.

Empidonax flaviventris Baird. YELLOW-BELLIED FLYCATCHER. One was shot July 15, 1914, along the South Kawishiwi west of the Clear Lake portage.

Empidonax minimus (W. M. & S. F. Baird). LEAST FLYCATCHER. Several seen during July, 1914, along the Isabelle between the first and second portages.

Cyanocitta cristata cristata (Linn.). BLUE JAY. Common in all parts of the territory visited.

Perisoreus canadensis canadensis (Linn.). CANADA JAY. 1912: One was seen June 23, on the north shore of Clear Lake; August 19 several were seen along the Isabelle above the first portage, and August 24 two specimens were shot in this locality. 1914: The first specimen seen since entering the field July 1, was shot on the 23rd, at camp on the South Kawishiwi near the Gabro Lake portage. 1915: A Canada jay appeared at camp on the Clear Lake portage July 3; none was seen thereafter until August 4, a rainy day, when several of these birds appeared at our camp on the east shore of Lake Isabelle. Until we left this region on September 6, they were now seen frequently.

Corvus brachyrhynchos brachyrhynchos Brehm. CROW. 1912: Several were seen August 14, at Gabro Lake. 1914: July 1, several were observed at White Iron Lake and along the White Iron river; further east crows were seen only occasionally and in small numbers. 1915: July 3, two were seen at Gabro Lake August 1, two were seen near camp on the east shore of Lake Isabelle, and on the 5th two adults accompanied by young birds were seen in the same locality.

Agelaius phoeniceus phoeniceus (Linn.). RED-WINGED BLACK-BIRD. 1914: July 1 and 10, a small number of Red-wings, apparently nesting, were observed at some marshy places along the North Kawishiwi just above "Dead Man's Rapids." 1915: A few birds were seen in the first mentioned locality July 6; adults with young barely able to fly were found July 21, on a small creek entering the Isabelle about three-fourths of a mile above Lake Bald Eagle; July 26 a brood of young unable to fly was found at the outlet of Rice Lake.

Quiscalus quiscula aeneus Ridgw. BRONZED GRACKLE. 1912: June 20, a nest with young in pinfeathers was found along the North Kawishiwi just below the first rapids. 1914: July 6, small numbers, apparently nesting, and July 24 young birds were observed in the same locality.

Hesperiphona vespertina vespertina (W. Coop.). EVENING GROSBEEK. 1914: A male and female were observed August 3, along the Isabelle river about two miles above Lake Bald Eagle; August 13, and

again on the 17, a male was seen near camp on the first portage of the Isabelle above Rice Lake. 1915: July 28 and 30, a male was seen at the Rice Lake outlet.

Carpodocus purpureus purpureus (Gmel.). PURPLE FINCH. 1914: In July a young specimen was shot on the South Kawishiwi near the Gabro Lake outlet: August 4 two of these finches were seen along the Isabelle two miles above Bald Eagle Lake, and on August 8 a specimen was taken in the same locality.

Astragalinus tristis tristis (Linn.). GOLDFINCH. My only record is for July 27, 1914, when a male was observed at the Section 30 Iron Mine.

Spinus pinus pinus (Wils.). PINE SISKIN. In 1912 this species was found rather common during July, in the vicinity of Clear Lake, and along the South Kawishiwi.

Poocetes gramineus gramineus (Gmel.). VESPER SPARROW. 1915: A Vesper Sparrow was observed July 6 on the northwest shore of Clear Lake; July 10, a specimen was shot from among a number seen on the north fork of the Kawishiwi near its junction with the south fork.

Zonotrichia albicollis (Gmel.). WHITE-THROATED SPARROW. 1912: July 13, common along the South Kawishiwi and on the Gabro Lake portage. 1914: July 3, many observed along the North Kawishiwi and in the vicinity of Clear Lake; August 3, a nest containing two eggs and one newly hatched young was found on the second portage of the Isabelle above Lake Bald Eagle. 1915: July 1 and 3, White-throated Sparrows common along the White Iron River.

Spizella monticola (Gmel.). TREE SPARROW. One was observed July 18, 1915, on the west shore of Lake Bald Eagle.

Spizella passerina passerina (Bech.). CHIPPING SPARROW. One observed August 4, 1915, on the east shore of Lake Isabelle.

Junco hyemalis hyemalis (Linn.). SLATE-COLORED JUNCO. 1912: July 23, a specimen was shot on the North Kawishiwi-Clear Lake portage. 1914: Several were seen July 17 and 19 near the Gabro Lake outlet.

Melospiza melodia melodia (Wils.). SONG SPARROW. 1912: Many seen June 18 and 20 in the vicinity of the North Kawishiwi-Clear Lake portage. 1914: July 7, a specimen was shot in the same locality.

Zamelodia ludoviciana (Linn.). ROSE-BREASTED GROSBEEK. 1914: A male was seen July 1 at White Iron Bridge; another male was seen July 7 on the Clear Lake portage. 1915: A male and female were seen in the last named locality July 3, and a male again on July 6.

Pyrrhuloxia erythromelas Vieill. SCARLET TANAGER. 1914: A male was seen July 8 at the North Kawishiwi-Clear Lake portage, and another at White Iron bridge, July 27. 1915: A male was observed July 4 at the North Kawishiwi-Clear Lake portage.

Iridoprocne bicolor (Vieill.). TREE SWALLOW. 1912: A nest was found June 22 in a hollow tree in the flooded area of the North Kawishiwi below the first rapids. The species was abundant along the river men-

tioned, as far as the first rapids which marked the limits of a flooded area in which dead timber furnished numerous nesting holes. 1915: July 5 a nest containing well-fledged young was found near the site of the first mentioned nest. July 21 Tree Swallows were observed flying about in great numbers over the small tributary of the Isabelle just below the first rapids.

Bombycilla cedrorum Vieill. CEDAR WAXWING. 1912: Common along the north and south forks of the Kawishiwi and in the vicinity of Gabro Lake, during the months of June and July. June 28 a Cedar Waxwing was observed on its nest in a pine near the long rapids of the North Kawishiwi.

Vireosylva olivacea (Linn.). RED-EYED VIREO. 1912: June 18 and 20 many were seen and heard in the Clear Lake region. 1914: Very common in the same locality; July 25 a Red-eyed Vireo was found on a nest containing three eggs, situated in a young birch tree on the shore of the South Kawishiwi near the Clear Lake trail. 1915: During early August the Red-eye was heard at intervals along the Isabelle river in the Rice Lake region and on the 18 one was seen at Lake Isabelle.

Lanivireo solitarius solitarius (Wils.). BLUE-HEADED VIREO. July 24, 1914, a female was shot at camp on the South Kawishiwi below Gabro Lake outlet.

Mniotilta varia (Linn.). BLACK AND WHITE WARBLER. 1914: July 20 a male was shot at camp on the South Kawishiwi. 1915: July 15 one was observed near the mouth of the Isabelle river.

Vermivora peregrina (Wils.). TENNESSEE WARBLER. 1914: One was taken July 8 and one July 10 near the Gabro Lake outlet.

Dendroica caerulescens caerulescens (Gmel.). BLACK-THROATED BLUE WARBLER. July 17 a male specimen was shot from among several of this species accompanied by chickadees, in a grove of spruce and pine on the north bank of the South Kawishiwi near the Gabro Lake outlet, on August 21 another male was taken along the upper course of a small stream entering Rice Lake on the east shore. 1915: A male was observed August 30 on the east shore of Lake Isabelle.

Dendroica coronata (Linn.). MYRTLE WARBLER. A young specimen was taken July 16, 1914, on the burnt-over hills bordering the South Kawishiwi near the portage to Gabro Lake.

Dendroica magnolia (Wils.). MAGNOLIA WARBLER. 1914: July 16, a male specimen was shot in dense woods along the South Kawishiwi near the Gabro Lake outlet; the species had been seen a number of times since the first of the month. 1915: A male was observed August 4 on the east shore of Lake Isabelle.

Dendroica pensylvanica (Linn.). CHESTNUT-SIDED WARBLER. 1914: A pair was seen July 1 at White Iron bridge; July 2, the species was frequently observed along the North Kawishiwi eastward as far as the Clear Lake trail; July 13, this warbler was seen again on the Gabro Lake trail. 1915: Several were observed July 5 at White Iron bridge.

Dendroica fusca (Müll.). BLACKBURNIAN WARBLER. 1914: Two were observed August 15 on the first portage of the Isabelle above Rice Lake. 1915: August 17, several were observed in a grove of spruce on the east shore of Lake Isabelle.

Dendroica vigorsi (Aud.). PINE WARBLER. A specimen was shot August 15 at camp on the Isabelle river portage above Rice Lake.

Seiurus aurocapillus (Linn.). OVEN-BIRD. 1914: One was observed July 6 on the North Kawishiwi-Clear Lake portage; had been heard several times in that locality since the first of the month. 1915: One was seen August 16 on the east shore of Lake Isabelle, and September 7 two were heard on the Clear Lake portage.

Seiurus noveboracensis notabilis Ridgw. GRINNELL'S WATER-THRUSH. July 4, 1914, a male specimen was shot along the south bank of the Kawishiwi about two miles east of Farm Lake.

Oporornis philadelphia (Wils.). MOURNING WARBLER. One was seen July 3 on the north shore of Clear Lake, and July 23 a male specimen was shot at camp near the Gabro Lake outlet.

Geothlypis trichas trichas (Linn.). MARYLAND YELLOW-THROAT. 1912: June 17 to July 4 several were seen on and about the North Kawishiwi Clear Lake trail. 1914: August 11 a number were seen along the Isabelle river above the first portage. 1915: July 21 several were seen along the tributary stream near the mouth of the Isabelle; July 26 a male was seen at a small stream entering the Isabelle about a mile and a half below Rice Lake.

Setophaga ruticilla (Linn.). REDSTART. July 1, 1914, a male and female were seen at White Iron Bridge, and August 15 a female was seen near the outlet of Gabro Lake.

Troglodytes aedon aedon (Vieill.). HOUSE WREN. June 20 and July 15, 1914, the House Wren was found to be common along the north and south forks of the Kawishiwi in the Clear Lake region.

Nannus hiemalis hiemalis (Vieill.). WINTER WREN. August 6, 1914, a specimen was shot at the third portage on the Isabelle above Lake Bald Eagle; another was seen in that locality August 14.

Certhia familiaris americana (Bonap.). BROWN CREEPER. August 15, 1914, several were seen on the first portage of the Isabelle above Rice Lake.

Sitta canadensis Linn. RED-BREASTED NUTHATCH. 1914: July 25 a female specimen was shot at the narrows of the South Kawishiwi southwest of the Clear Lake trail. 1915: August 11 this species was several times seen in the region of Lake Isabelle.

Penthestes atricapillus atricapillus (Linn.). CHICKADEE. Common throughout the region. Observed on North Kawishiwi-Clear Lake trail, July 5 and 6; one specimen was shot on the Gull Lake trail August 18, 1914.

Penthestes hudsonicus hudsonicus (Forst.). HUDSONIAN CHICKADEE. 1914: One specimen was shot August 18 midway on the Gull

Lake trail, August 21 another was taken from among a flock of several along the small stream entering Rice Lake from the east.

Regulus satrapa satrapa Licht. GOLDEN-CROWNED KINGLET. July 22, 1914, a male specimen was shot on the east shore of Lake Isabelle.

Hylocichla ustulata swainsoni (Tschudi.). OLIVE BACKED THRUSH. 1912: Common in the region about Clear Lake during latter June and early July. 1914: Frequently seen and heard again in the first mentioned locality; August 21 an Olive-backed Thrush was caught in a mouse-trap set under an old log in deep woods at the first rapids of the Isabelle above Rice Lake. The same day another specimen was shot at a small lake one mile east of Rice Lake.

Hylocichla guttata pallasi (Cab.). HERMIT THRUSH. Common in the region about Clear Lake during July, 1914. On the 7th a nest with four eggs was found by one of my companions, Prof. N. L. Huff, in a small sphagnum bog sprinkled with low spruces and tamaracs, along the old unused portage trail around the first two rapids of the North Kawishiwi river. July 11, a male bird was shot on the Clear Lake trail opposite these rapids.

University of Kansas, Lawrence, Kansas.

IN THE HAUNTS OF CAIRNS' WARBLER

BY C. W. G. EIFRIG.

EVERY ornithologist, professional or otherwise, knows with what joyous anticipation one from time to time returns to the scenes of former explorations. There is a halo of romance around the places and the time of one's early efforts in ornithology, where his first love and enthusiasm led him forth on many trips, always eager, expectant, and on the verge of new discoveries. This was the writer's state of mind, when June 14, 1918, he once again found himself at Oakland, near the south-western corner of Maryland, in the so-called glade region of the Maryland Alleghanies, his ultimate goal being Accident, a quiet hamlet about twenty miles north, but still in Garret County. Nature had on her most engaging smile as I set out for my destination over the fine new state road, that connects Oakland with the Old National Pike at Keyser's Ridge. A walk or drive over this road reveals the

beauties of this charming region; it winds through fine woods, showing quite a different type of vegetation from the prairies around Chicago, then it runs along the hillsides giving one glimpses of small farms, changing off with tamarack, spruce and alder swamps in the valley, and beyond that, line upon line of the peculiar long-drawn out hills and mountains of the Alleghanies, stretching out to the horizon in bewildering fashion, until lost in blue haze. The shallow valleys here are from 2000 to 2400 feet above sea-level; the surveyor's plug before my host's house at Accident shows 2395 feet, while the highest hill nearby, Georges Hill, is marked 3004 feet. To a westerner this will seem a negligible elevation, but it is here enough to produce Canadian conditions of climate; just a little lower down along the stream valleys are of course distinctly southerly conditions, producing an overlapping and odd intermingling of Canadian and Carolinian faunae and flora, an eldorado for the nature-lover and naturalist. As there is also an abundance of pure, cool air, and a dearth of mosquitoes, it is at the same time an ideal region for the tired vacationist from the large cities.

To see what changes, if any, would be observable here since my former rambles over this region, and to add new species, if possible to my list of 'Birds of Allegany and Garret Counties' (Auk, Vol. XXI, pp. 234-250; XXXII, p. 108, etc), the next month was spent in tramping over the hills and prowling through the ravines and thickets of this section, and through those of the neighborhood of Cumberland, Allegany County. In company with a friend, who is at once a mountaineer, keen observer and student of nature, I would set out early in the morning and return in the evening tired and bedraggled, but happy.

In the cool, dark ravines along the brooks, as well as on the mountain tops, where a primeval stand of tall white pine, black spruce and hemlock is still found in a few places, and where the rhododendron flourishes, is the favorite habitat of Cairns' Warbler (*Dendroica c. cairnsi*). In my last communication on this region (Auk, XXXII, pp. 108-110), I had expressed my conviction that this subspecies should be eliminated from the 'Check-List' as indistinguishable from *D. c. caerulescens*, but I am now "fully persuaded." The females are more distinguishable than the

males, although the difference is so slight, that the bird must be had in the hand to appreciate it. Here, in the mossy, fern-covered banks under the rhododendron, as well as in its almost impenetrable thickets the nests are located, and here the song, a rapid, explosive, ascending *dill dill dree*, may be heard on all sides. This song is indistinguishable from that of *D. c. caerulescens*.

In the same places, but staying higher up in the tall hemlocks above the rhododendrons, the Black-throated Green Warbler holds forth, here as during migration, a companion of the Black-throated Blue. But since subspecies must be made, here it seems is where a new one should be introduced. Since my first visits to this region about 1900, I was struck by the dingy appearance and small size of most of the males, though some were of normal, intense coloration. At first, I ascribed it to wear and moult, but in June warblers are at their best in appearance, and furthermore, the olive on the back seems darker, while the song is weaker. So here are differences that can be perceived when the bird is in bush or tree.

In the same habitat is found the Magnolia Warbler, only in smaller numbers. Its song here as in Canada, sounds to one like *weetsi weetsi weetsi*, accent on the next to last syllable, whereas *D. virens* seems to say *dee dee dee ah di*, accent on the antepenult.

Even less abundantly than the Magnolia is found the Blackburnian Warbler (*D. fusca*), in the same habitat. It is especially partial to the tops of hemlocks. On the 15th of June we saw a male gathering nesting material on the edge of the much traveled state road, at Bear Creek Hollow. We watched it and saw that he took it into a hemlock, about 35 feet up, ten feet out on a large, horizontal limb, where with the glasses we could make out the form of a tiny nest. A week later we got it down with much labor, only to find it empty. It is built of the thinnest dry twigs of hemlock, a little bast and fiber, and lined with horse hair; its diameter is three and a half inches over all, the cup one and three quarter by one and a half inches deep. The song of the Blackburnian is low and remarkable for its nasal and ventriloquial quality. One sang a monotonous *tsi tse tse tsnnn*, another *dell dell dell tsit tsit tsitnn*, sometimes tender then again strangely muffled.

A distinct surprise among the warblers was furnished by the Canada Warbler. Since my last visit four years previously it

had increased strikingly in numbers. During a brief walk on the afternoon of my arrival, we saw and heard about twenty in the same habitat as the preceding four species, and everywhere we went we found it common, in all kinds of woods, evergreen and hardwood, second growth brush, along creeks and on dry mountain crests. Their coarse, loud, unwarbler-like alarm note was one of the commonest sounds heard. Many were carrying food, showing that the young were already out of the eggs. The old birds would fly closely about one, with their sparrow-like chirp, scolding the intruder out of their nesting range. Similarly obtrusive and solicitous were the Ovenbirds, likewise found in all kinds of woodland habitat.

Two warblers had moved in since my last visit, the Yellow-breasted Chat, and the Golden-winged Warbler. Two pairs of the former had taken up their stand in small brushy second growth, where the primeval pine, spruce and hemlock had been cut out, moving in from lower down, where it is common. A pair of the Golden-wings were observed in Kolb's Hollow, having also followed the clearings. This is a good instance of how man's interference with and changing of natural conditions promptly influences flora and fauna.

In the fringe of alders along Bear Creek and in swampy corners of the farm, the Maryland Yellow-throat can be heard, and along the creeks the two Water-Thrushes are found, *Seiurus motacilla*, and *S. n. noveboracensis*. One of the former we saw carry food. Besides these, the Chestnut-sided Warbler is common, in the same places as the Canada and its song *wi di di dereea* almost becomes monotonous. The Yellow Warbler, however, is rare; I noticed only one pair and those in my host's orchard, where one of them sang once as late as 9 o'clock in the evening.

In the same place where the odd notes of the Chat were first heard, a Catbird struck up its song and amused us greatly by suddenly weaving in the call of the Whip-poor-will. This was the only time that I heard the Whip-poor-will song during my stay, whereas formerly the hollows and hillsides resounded with it every evening. There is a sad decrease in the numbers of this bird, and I may add, the same holds good for all places where I have been of late years, in Indiana, Michigan, and Illinois, every-

where a decrease from former numbers. Let us hope that it has correspondingly increased elsewhere in its range. The Brown Thrasher, Red-eyed Vireo, and Wood Pewee also seemed much less common than formerly.

Prairie Horned Larks are not uncommon breeders here. They are absent in summer below 2000 feet. A pair could usually be seen at certain places on the roads, always at the same ones. Of flycatchers the Crested is found, the Kingbird more commonly, and each orchard generally harbors one pair of the Least, also a pair of Baltimore Orioles. Bobolinks are more numerous now than formerly, as it is to be expected when agriculture spreads out at the expense of the forest. At Thayerville, at the house where President Cleveland spent his honeymoon, an Alder Flycatcher was seen in the alders lining Deep Creek. The former Lake Cleveland has disappeared and is changed into fields. Meadow-larks are common, Redwings, less so, because cattail swamps are absent; and they have to frequent the alder-bordered natural meadows. A nest of a pair was found 20 feet up in an apple tree in an orchard adjoining one of these meadows. Nearby the call of the Kingfisher could be heard over Bear Creek, as well as the song of the Cardinal.

One of the commonest songs here now is that of the Scarlet Tanager. It frequents the tops of wooded ridges, from where its strident notes could nearly always be heard, but sometimes is found in the woods on the slopes and even in hollows. It is decidedly on the increase.

In the finch and sparrow tribe, the Goldfinches are common, Indigo Buntings not rare, Vesper, Song, Field and Chipping Sparrows plentiful. With three Vesper Sparrows we had a unique experience. Coming home one evening from where I had forgotten my glasses under the Blackburnian's nesting tree, a new song made us stop below a Vesper Sparrow on a telephone wire. It was loud and musical, entirely different from the usual Vesper performance. A day or two later, on the road to Negro Mountain, I heard the same song from one of the same species, and a little farther on another one. I made sure it was the Vesper Sparrow but the song was plainly that of Bewick's Wren! My theory is that a family of Vespers was raised near the nest of a

Bewick's Wren, where they heard that bird's song all the time and learned it instead of their own. We met with no Bewicks this time, but a few are here, at least were until lately. The House Wren is increasing in numbers, and very probably Mr. Ridgway is correct when he says that the House Wren drives out Bewick's Wren. The colony of Winter Wrens, which we discovered in 1914 on Negro Mountain, was no longer there. Grasshopper Sparrows are common in alfalfa and timothy fields, as are the Towhees in the brushy second growth on the hills.

The most interesting member of the finch tribe here is the Carolina Junco, which also seems to me to be growing less common. Still it can not be called rare. It is equally distributed over the rocky slopes and tops of mountains, as well as in mossy hemlock stands, but not below about 2500 feet. Families of old and young were seen, the young being heavily streaked on the breast, something like young Chipping Sparrows. While watching the noisy antics of a pair of Ovenbirds on the road to Negro Mountain, a Junco dropped out of her nest in an invisible pocket in the low bank, opposite where a road had been cut along the hillside. The nest under overhanging roots and moss contained three eggs in the morning, in the afternoon, when I returned, only two, so I took it along. The nest, made of moss, lichen and a few plant stems on the outside and rootlets and horse hair on the inside, measures five inches in diameter, the cup two and three quarter by one and a half inches deep. The eggs are pale bluish, with a wreath of pale lavender and brown spots near the thicker end, much like those of *J. h. hyemalis* in Canada. These pockets in low or higher banks along wood roads are characteristic nesting places, also for the northern form and the nest would rarely be found, if the owners would not drop out of them and fly away at one's approach. I never found a nest on the level, chestnut-covered tops of the mountains. The song of the southern form is more sonorous and alto than that of the northern, it sounds much like the second part of the song of the Towhee. They breed twice in a season.

Of the woodpeckers we saw a few Hairy, Downy, and Red-headed, also Flickers and Yellow-bellied Sapsuckers. The Pil-eated and Redhead are decreasing in numbers. Mr. F. Burk-

hard, my companion, told me that during or after a late snow-storm in the previous April, several Flickers had been found dead, showing that even such a large and hardy species sometimes succumbs to inclement weather.

Raptors are decidedly rare here, because people shoot all they can. We saw only two Redtails in Glotfelty's primeval piece of timber in Negro Mountain, where we have seen them at each visit, probably always the same pair. Twice I saw a Sharp-shinned Hawk furiously pursued by a Kingbird, that fairly screamed with rage. Turkey Vultures are still common. The old hollow logs and the many cavities between the rocks along the tops of the mountains offer good nesting sites for them, and the sheep, killed by roving dogs, no doubt furnish them with sustenance.

Among gallinaceous birds the Ruffed Grouse is still fairly common. Once we startled several, together with a Rose-breasted Grosbeak, out of a large shadbush, where they had been busily feeding on the luscious berries. I was told that foxes are a great scourge to the Grouse, killing quite a few on the nests or at least destroying the nests. The Bobwhite has sadly dwindled away; we heard its call only once, and the Wild Turkey is almost gone.

Since there are no water bodies here beside the bush-covered creeks, there are few water birds to be found. At two small artificial ponds I saw a family of Killdeer and a Spotted Sandpiper. In the house of the owner of one of the ponds, I saw mounted specimens of Pied-billed and Horned Grebes, as well as a Lesser Scaup, which occasionally drop into the pond during migration.

The only addition to the avifauna of the region covered by the list in volume XXI of 'The Auk,' was made at Cumberland, whither I went from Accident. The old trails on Savage Mountain to Wolf Gap and Finzel, on Will's Mountain to the Mason and Dixon line and others, added the warblers of the lower country to the list, such as the Hooded, Worm-eating, Prairie and Pine Warblers, and the Redstart, which should have been met with in the mountains, also Cooper's and the Broad-winged Hawk. The Swan Ponds—not Swamp Ponds as given in my former list—on the West Virginia side of the Potomac, I found ditched and drained and turned into corn fields. However, we found a family

of Upland Plovers there. Thus does man's activities play havoc with the finest natural homes of certain species of birds. The colony of Ravens, formerly located in the romantic Rocky Gap, six miles east of Cumberland, was also no more. As if to mitigate this disappointment, however, I found on July 9, a family of Blue Grosbeaks (*Guiraca c. caerulea*) on Knobley Mountain, making at least one species, and that an interesting one, to be added to the birds of western Maryland.

Oak Park, Illinois.

PATTERN DEVELOPMENT IN TEAL.

BY GLOVER M. ALLEN

AN article by Mr. Frederic H. Kennard in 'The Auk' for October 1919, describing and naming the Southern Blue-winged Teal as a distinct subspecies, brings out a point of considerable evolutionary interest, which it seems to me is worth emphasizing. The chief mark of the newly recognized race is the presence of a white superciliary stripe continuing the white crescent between the eye and bill, characteristic of the common Blue-winged Teal, and the two stripes, one on each side, meet at the back of the head and are continued medially to form a white nuchal patch of varying extent. This unusual extension of the white crescentic mark is found in the adult males only and is characteristic of the completely developed nuptial plumage in the Southern birds. A similar, though often irregular line, is sometimes seen in partially white domestic pigeons and ducks.

The formation of a definite pattern of pigmented (*i. e.*, colored) and pigmentless (*i. e.*, white) areas, particularly in birds and mammals, is a subject which has greatly interested me, and in an article in the *American Naturalist* (vol. 48, p. 385-412, 467-484, 550-566, 1914) I have endeavored to establish that in these two classes of vertebrates, white markings when present tend to occur in certain definite places. This is due to the fact that the surface

of the body may be divided into some eleven areas from whose individual centers the tendency to produce pigment in the epidermal structures (hair or feathers) tends to become less and less as the periphery of the particular area is reached. These areas may bear some as yet unrecognized relation to the distribution of nerves. The borders of contiguous areas may overlap, and the details of their topography in different mammals and birds may vary, but in general their outlines are fairly definable as follows:

(1) a median *crown patch*, in birds pigmenting the top of the head from base of beak to occiput above the eyes; (2) an *ear patch* on each side covering the side of the head and upper throat from the level of the eye to the median line above and below; (3) a *neck patch* on each side pigmenting the area from the upper throat to the shoulders; (4) a *shoulder patch* on each side pigmenting the feathers of the wing and a narrow area at its base from center of back to center of breast; (5) a *side patch* on each side of the body which includes the area from shoulder to rump; and (6) a *rump patch* on each side which pigments the posterior end of the body, the tail, and most or all of the hind leg. These patches are outlined in the accompanying diagram (Fig. 1). I have called these color areas primary patches. They may break up further to form complex patterns.

The definition of these patches is sometimes complicated by two (or three?) other types of pigmentation which in some species co-exist with this *centripetal* type—namely, a diffuse pigmentation from many small independent centers, producing the spotted effect seen for example in the Dalmatian Coach Dog, and a *centrifugal* type, which produces black “points” at tips of nose, ears, limbs or tail in certain species. A black median area on the spine is perhaps a manifestation of this same type. These three types of pigmentation behave differently in heredity and have been studied lately by several geneticists. It is likely that the median crown patch, very small in mammals, may really consist of two bilateral centers, here in close juxtaposition for in birds it is frequently divided by a white median line, though in the few mammals where I have seen it (*e. g.*, dogs) it is not so divided.

From a study of pied individuals of species which normally have complete pigmentation, it is found that the white markings

tend to occur at the peripheries of the pigment centers as above defined, and result from the failure of pigment to develop at the edges of these centers. The more the pigmentation is restricted, the greater is the amount of white between the respective centers. If each patch or center were to be *slightly* reduced, a series of five pigment spots on each side, and one on the crown would result, bounded by white lines—a median white line from the occiput to tail, and cross stripes separating the five patches of each side. A much greater but regular restriction of each patch would result in reducing the pattern to a series of five small spots on each side with a single median one on the crown; and still further reduction brings about a pure white condition with black eyes—(possibly

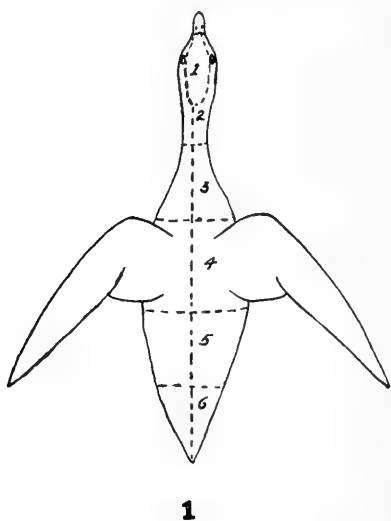


Figure 1.—Diagram showing chief pigment areas of a bird's body, from above.

the eyes being in part of ectodermal origin, should themselves be regarded as an additional pair of pigment centers). Such white animals with black eyes occur as artificial breeds in a number of species, and on account of their possessing a potential pigmentation, act as pigmented individuals in crosses with true albinos which do really lack the pigment-producing factor. Actually there is great variation in the amount of reduction, for not only

does each spotted individual differ in the extent of its pigmented areas, but corresponding areas of opposite sides vary in the amount of reduction in the same individual, so that often the contiguous patches of one side may show a white break between them, while those of the opposite side retain contact.

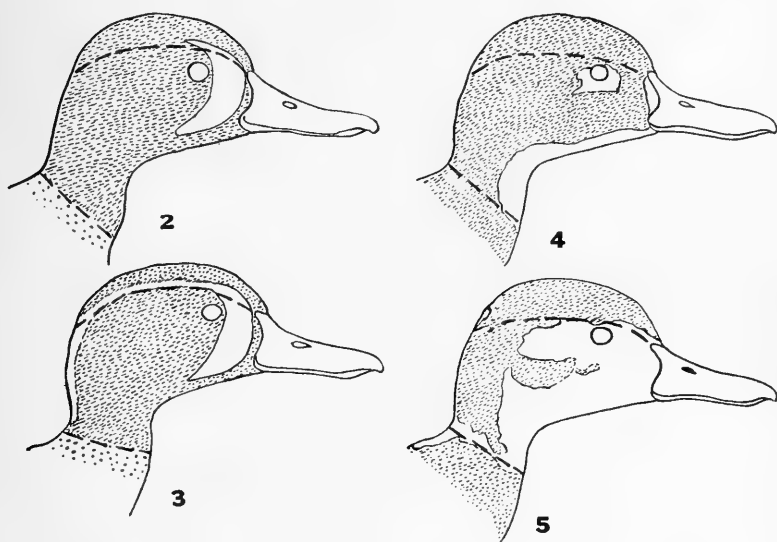


Figure 2.—Head of Blue-winged Teal, to show pattern. In this and the other heads, the approximate outline of crown patch and the boundary between ear and neck patches, are shown by a heavier dotted line.

Figure 3.—Head of Southern Teal, showing extension of white pattern through restriction of ear patch dorsally and posteriorly.

Figure 4.—Andaman Teal (*Polionetta albigularis*) showing slight reduction of ear patch.

Figure 5.—White-cheeked Andaman Teal (*P. a. leucopareus*) showing incomplete formation of a white collar by failure of ear patch to meet the upper end of neck patch.

But to return to the Teal, the point of interest is that the white crescentic mark of the normal bird is due according to this view, to a restriction of the ear patch (whose ultimate center is the aural region) at its front end, so that a pigmentless area is left at the base of the bill (Fig. 2). The head pattern of the common Blue-

winged Teal has developed no further. In the Southern Teal, however, (Fig. 3) a further restriction of the ear patch has taken place, producing a complete line of separation between it and the crown patch, so that a white superciliary line results from the failure of these two patches to develop pigment at their common border; and in those individuals that show a white nuchal area, this restriction has involved also the posterior extension of the ear patches of opposite sides so that a white streak results when they fail to meet along the median line of the neck. Obviously this condition, with its more complex pattern, represents a more highly evolved plumage than that of the Common Blue-winged Teal. It is, therefore, not unexpected that it should occur only in the most highly developed or nuptial plumage, at the time when the bodily vigor is most intense. It may be well to add here that the presence of albinistic or white areas does not imply, as many suppose, an impaired bodily vigor, but merely a specialized condition of the factor producing pigment in the epidermis. The fact that the amount of white in the pattern of many natural species is very variable, indicates, I presume, that its areal development has not come under a strong selective force so that the boundaries of the white areas have not become fixed. That the white head-marking of the Southern Teal is of a fairly definite nature, may show, conversely, that it *has* become a factor in this bird's welfare and is tending to be symmetrically developed as part of a definite pattern. For this reason the extension of the usual white area is of value as a diagnostic mark of the more southerly breeding Teal.

On my expressing to Mr. Kennard an interest in this bird, he has kindly called my attention to an observation of Mr. Stanley C. Arthur (since published in 'The Auk') who has for three years past kept in confinement in the flying cage of the Audubon Park, New Orleans, one of these Southern Teal, showing the characteristic "necktie" marking. In the spring following its capture, this drake molted into the nuptial plumage, but the white superciliary line and nape patch seemed less definitely white than Mr. Arthur's recollection of them the year before. In the next year, however, when the bird again assumed its spring plumage, neither the white line nor the white nape patch was apparent. The bird's

death occurred shortly after, in April of that year. This interesting case only serves to emphasize still further that this "necktie" pattern is a newly acquired character in the phylogeny of the race, and in the growth of the individual is assumed at the time of its highest physiological development. The fact that the captive bird finally lost this marking may have been due to impaired vigor, either as a result of old age or as a result of the abnormal conditions of captivity, which as is well known, nearly always result in interrupting the usual course of physiological processes. If due to senescence, it is paralleled by numerous other cases in both vertebrates and invertebrates. A familiar one is the "going back" of deer antlers in old males.

The Southern Teal is not the only duck that might be cited as a case of formation of a distinct geographical race through the differential development of white areas in the plumage by restriction of pigmentation. Mr. Outram Bangs has called my attention to the case of the Teals of the Andaman Islands, *Polionetta albigularis*, in which (Fig. 4) the ventral side of the throat and a spot just below the eye are white, showing thus only a slight restriction of the ear patches ventrally and about the eye. In one of two specimens from the same locality, however, white feathers appear at the base of the bill, and the white mark below the eye is much larger than in the other, indicating that the pattern is still in an unstabilized condition. The development of white areas thus begun, is carried still further in the race *P. a. leucopareus* from North Reef Island, in the same group, in which the restriction of the ear patches is so extensive (Fig. 5) that the upper throat and side of head to the level of the eye are white as far back as the ear opening, and a white collar has resulted through failure of the ear patch to reach the upper edge of the neck patch. Behind the ear, the crown patch is still united with the ear patch except at the occiput, where a very small white spot occurs in one of the two specimens seen. One might conceive of a further stage in evolution of this pattern, whereby the crown patch would persist intact, but the ear patches dwindle perhaps to a very small spot over the ear opening. Such a pattern is found in the Old-squaw female in winter. A subsequent loss of the crown patch would then leave a head pattern similar to the adult male Old-squaw.

Dr. John C. Phillips tells me that the Congo Teal shows very beautifully in a series of specimens from the same general region, a variation in the degree of restriction of the individual pigment centers. The common Mallard as I have shown in the article above cited (*Am. Nat.*, 1914, vol. 48, p. 483) frequently shows under domestication, the development of white superciliary lines that correspond in position with white areas which have in other species become a permanent part of the pattern. The normal male Mallard has in the fully developed plumage, a white collar at a point bounding the upper limit of the wine-colored neck. This is merely the development of a white area at the point of contact between the ear patches covering the sides of head and upper throat, and the neck patches pigmenting the lower throat. (Here the two sets of patches are of different colors.) In the domesticated Black Mallard this white ring is often absent, on account of the complete development of the two sets of pigment patches. I have also seen a female Mallard in which a white half-ring was present as an albinistic spot in just the place where it is completely developed in the male, showing that this is one of the contact points between two pigment centers, a place of least color formation, where, if restriction of pigment areas takes place, a white mark will first result. Indeed the Anatidae seem especially favorable for a more intensive study of this method of pattern formation, and well merit special investigation as to the development and transmission of partial pigmentation. Already careful studies of rats, mice, guinea-pigs and rabbits have been made by geneticists on these lines, and it is to be hoped that comparative studies on birds will follow.

Boston Society of Natural History, Boston, Mass.

NOTES ON THE BIRDS OF SOUTHEASTERN NORTH CAROLINA.

BY EDWARD FLEISHER

DURING the week beginning April 13, 1919, I visited that section of North Carolina lying between Wilmington and the mouth of the Cape Fear River, thirty miles to the south. Throughout this region the soil is sandy, with here and there muddy bottoms in which grow the great bald cypresses and live oaks with their draperies of *Tillandsia* "moss." The coastal region at the mouth of Cape Fear River, and, more particularly, Smith's Island, approach the sub-tropical in both climate and flora. Here such trees as the cabbage palmetto, the magnolia and the prickly ash are found. Many of the Smith's Island palmettos, however, were killed or injured in the cold winter of 1917-1918.

Smith's Island, off the mouth of the Cape Fear River, is roughly in the shape of an arrow, the point of which, Cape Fear, is the southernmost point of North Carolina and at about the latitude of Atlanta, Ga. The flanks of the arrow consist of sandy beaches of a total length of about fifteen miles. In the central part are extensive grassy marshes bordered by dense woods. One end of the beach terminates in a narrow spit of sand separating the ocean from Buzzard's Bay. It is here that the sea birds formerly nested, though I doubt whether they still do so in large numbers, as herds of semi-wild cattle wander over the island and their tracks can be seen in the sand.

On the east side of Cape Fear the sea is gradually cutting into the woods, and the shore presents a wild aspect. The beach is covered with a tangled mass of prostrate and semi-prostrate trees, and the breakers seethe about those still standing. Here and there, lagoons of salt water are bordered and dotted with gaunt trees.

It was on top of one of these trees that I discovered a Roseate Spoonbill (*Ajaia ajaja*), a thorough surprise and the best find of the trip. I had the bird under observation for only two or three minutes, though of course there was no mistaking him after the

first glance. I was rounding a "point o' woods" on the beach early in the morning of April 15 when I caught sight of a great pink bird about 100 yards away. I had barely time to feast my eyes on him through my 8-power binoculars when he discovered me and flapped off, flying directly past me toward the sea, then turning and making for another part of the island. According to Chapman, these birds in the eastern United States, are "confined to the most inaccessible swamps in Florida." However, when I told Captain Willis of the Smith's Island Life Guard Station of my find, he said that he had seen two of these birds "last summer." He could not remember just when, but he gave me a good description of the birds and a circumstantial account of the conditions under which he had seen them. They had impressed him as they were the only large pink birds he had ever seen on the island.

The only herons observed on the island were the Great Blue Heron (*Ardea h. herodias*), the Louisiana Heron (*Hydranassa t. ruficollis*) and the Little Blue Heron (*Florida caerulea*), a few of each; and there were no indications that herons had nested there recently. Although I saw eleven species of Limicolae, it was apparently too early for large flocks like those that occur on Long Island, New York, a few weeks later. Nor did I realize my expectation of meeting the great north-bound army of warblers and other migrants. In fact, with few exceptions the transients observed were those that usually occur in the latitude of New York during the last week in April, *i. e.*, about a week later.

Rivalling Smith's Island in interest for me was my trip to the heronry on Orton Lake. Lying about midway between Wilmington and the mouth of the Cape Fear River is this beautiful body of water with its temples of buttressed cypress trees. The owner of the lake, a typical Southern gentleman, takes great pride in his herons, and I was not at all offended when he told his colored servant, who was to be my guide, not to leave me alone with the birds. I must have been rough-looking in my dusty clothes and knapsack. Accompanied by two servants and the ubiquitous Ford, I was quickly driven to the edge of the lake and then rowed and poled between trees. The heronry, or what I saw of it, consisted of two parts: The Great Blue Herons and some of the

Egrets (*Herodias egretta*) in one place and the smaller herons in another. All except the Snowy Egrets (*Egretta c. candidissima*) were busy with nesting. The young of the Great Blue Herons could be heard calling from the nest in the tops of the taller trees. The Egrets were sitting, and in their part of the lake the little Blue and Louisiana Herons left off their nest-building operations to scold us at our approach. Some of the nests in the small trees about us had their clutches of blue eggs, but as no birds approached the nest near us I was unable to determine to which species the eggs belonged. A conservative estimate of the number of each species seen is the following: Great Blue Heron, 150, Egret, 20, Snowy Egret, 8, Louisiana Heron, 50, Little Blue Heron, 75, Black-crowned Night Heron (*Nycticorax nycticorax naevius*), 1. The actual number of herons in the lake area was probably much greater than these numbers would indicate.

In answer to a question, I was informed that "Dey all goes away in winter, excuse a few of de big ones."

I spent practically all the daylight hours during the week in the field. With the exception of a few light showers one day, the weather was most favorable, though usually very warm.

In the annotated list which follows, I give a conservative estimate of the total number of individuals of each species seen during the week.

Gavia immer. LOON. One individual seen in Cape Fear River, April 15.

Larus argentatus. HERRING GULL. Three, off shore.

Larus atricilla. LAUGHING GULL. Nine of these birds were seen, most of them on the river.

[**Sterna maxima.** ROYAL TERN (?). A large tern seen off shore appeared to be of this species.]

Sterna antillarum. LEAST TERN. With the exception of the above, these were the only terns observed. There were about 150 of them on the beaches of Smith's Island, April 14 to 16.

Rynchops nigra. BLACK SKIMMER. A compact flock of 24 flew to a mud flat on my approach and were still there, motionless, when I returned an hour later.

Phalacrocorax auritus, subsp. DOUBLE-CRESTED CORMORANT. A flock of five in the river on April 14, and another bird on the 17.

Pelecanus occidentalis. BROWN PELICAN. The pelicans, I was informed, occur regularly along the Smith's Island shore but rarely go much further north. I saw three flocks of nine, twenty-seven and four birds

respectively. I was talking to Captain Swann of the light house when I saw the twenty-seven. He remarked that he had never seen so large a flock before. The birds were all flying south, toward the cape. April 15.

Mergus serrator. RED-BREASTED MERGANSER. Three birds, April 14, one definitely identified as serrator.

Anas rubripes. BLACK DUCK. Four.

Charitonetta albeola. BUFFLEHEAD. A female, probably a belated migrant, April 15th.

Oidema americana. AMERICAN SCOTER. Four, April 15.

Oidema perspicillata. SURF SCOTER. One, April 15.

Ajaia ajaja. ROSEATE SPOONBILL. One.

Ardea herodias herodias. GREAT BLUE HERON. Besides the 150 mentioned above, a few individuals were seen on Smith's Island and along the shore of the Cape Fear River.

Herodias egretta. EGRET. The twenty birds seen were in and about their nests and I assumed that the nests contained eggs or young though I was unable to verify my belief as my time was limited and the nests were difficult of access.

Egretta candidissima candidissima. SNOWY EGRET. Only five of these beautiful birds were seen. They were apparently not nesting yet. They may have been the vanguard of a larger flock.

Hydranassa tricolor ruficollis. LOUISIANA HERON. Many of these birds and those of the next species seen in Orton Lake on April 17, were carrying sticks, and some had completed nests. These were in small trees above the water, and a few of those near the row-boat were seen to contain four eggs. Lack of time prevented me from ascertaining to which species the eggs belonged as the birds kept their distance. The dates given by Chapman for the nesting of this species and the next for South Carolina are April 20, and 23, respectively.

Florida caerulea. LITTLE BLUE HERON. All the Little Blue Herons that I saw at Orton Lake were in the adult plumage, and all appeared to be nesting or building. Five of the nine seen at Smith's Island were in the white plumage.

Nycticorax nycticorax naevius. BLACK-CROWNED NIGHT HERON. A single bird in adult plumage flying over Orton Lake.

Pisobia minutilla. LEAST SANDPIPER. Three on the beach at Smith's Island, April 15.

Pelidna alpina sakhalina. RED-BACKED SANDPIPER. A flock of 20. A few showed traces of reddish in the back and of black on the belly. The rest were in winter plumage, April 15.

Calidris leucophaea. SANDERLING. Eight individuals, a few showing the beginnings of the summer plumage. April 15.

Catoptrophorus semipalmatus semipalmatus. WILLET. About 15 of these handsome but noisy birds were observed along the beach. April 15.

Actitis macularia. SPOTTED SANDPIPER. Three, April 15.

Numenius hudsonicus. HUDSONIAN CURLEW. Seven in all. April 15.

Squatarola squatarola. BLACK-BELLIED PLOVER. A single bird. April 15.

Aegialitis semipalmata. SEMIPALMATED PLOVER. One lone ring-neck was seen with large flocks of the next species.

Ochthodromus wilsonius. WILSON'S PLOVER. This was by far the commonest shorebird, and the chirping, unplover-like note was heard everywhere on the beaches. One hundred and fifty is a very modest estimate of the number seen. April 15.

Arenaria interpres morinella. RUDDY TURNSTONE. A flock of 18 showing various stages of plumage. April 15.

Haematopus palliatus. OYSTER CATCHER. These queer birds were quite common (50), and the small clumps of oysters on the mud flats showed evidence of their work. In most cases, the smaller mollusks on the outside of the clumps were the ones that were opened and the larger ones were left alone. The natives call them "Oyster Birds" which is a better name than Oyster Catcher, inasmuch as these "luscious bivalves" are not noted for agility. They, the birds, are said to be permanent residents. April 15.

Colinus virginianus virginianus. BOB-WHITE. Two coveys of about 12 each in Sunset Park near Wilmington.

[**Meleagris gallopavo silvestris.** WILD TURKEY. According to all accounts these birds are still found in numbers in the unsettled regions back of the Cape Fear River. I was not able to locate any.]

Cathartes aura septentrionalis. TURKEY VULTURE. I found this bird much commoner than the Black Vulture. About 18 of the present species were noted as compared with 4 of the next.

Catharista urubu. BLACK VULTURE.

Haliaeetus leucocephalus leucocephalus. BALD EAGLE. There were 2 Eagles over the Cape Fear River on April 14 and 2, possibly the same, on April 17. These were the only Buteonidae observed.

Pandion haliaetus carolinensis. OSPREY. Two pairs of birds with nests at Smith's Island, and about 15 birds at Orton Lake. The nests of the latter were on the tops of the tall stumps of cypress trees that rose here and there from the waters of the lake.

Ceryle alcyon alcyon. BELTED KINGFISHER. Two at Smith's Island.

Dryobates pubescens subsp. SOUTHERN (?) DOWNY WOODPECKER. One.

Dryobates borealis. RED COCKADED WOODPECKER. Commoner than the preceding, but the relative absence of woodpeckers was noticeable. I observed a total of 10 birds of four species during the week altho the region is generally wooded.

Centurus carolinus. RED-BELLIED WOODPECKER. Three together near Orton.

Colaptes auratus, subsp.? FLICKER. Only one bird seen.

Antrostomus carolinensis. CHUCK-WILL'S-WIDOW. A note heard repeatedly in the night of April 17-18 was undoubtedly that of this species. I did not see the bird nor had I heard the note before.

Antrostomus vociferus vociferus. WHIP-POOR-WILL. I flushed a whip-poor-will on April 17 at Southport.

Chaetura pelagica. CHIMNEY SWIFT. Two at Southport, April 17.

Archilochus colubris. RUBY-THROATED HUMMINGBIRD. One at Wilmington, April 14.

Tyrannus tyrannus. KINGBIRD. Ten at Southport, April 17. Eight at Orton, April 18.

Myiarchus crinitus. CRESTED FLYCATCHER. About as common as the preceding. This was one of the few passerine birds seen at Smith's Island. I was told, however, that the woods were frequently "full of small birds."

Cyanocitta cristata cristata. BLUE JAY. Seen only at Southport. (About 15.)

Corvus brachyrhynchos brachyrhynchos. CROW. This species was less common than the next, the ratio being about 1 to 4. Sixty-five crows of the two species were noted.

Corvus ossifragus. FISH CROW.

Agelaius phoeniceus phoeniceus. RED-WINGED BLACKBIRD. One seen at Smith's Island.

Sturnella magna, subsp.? MEADOWLARK. A flock of 10 near Orton.

Icterus spurius. ORCHARD ORIOLE. Three at Southport, April 17.

Megaquiscus major major. BOAT-TAILED GRACKLE. About 12 in the salt marshes at Smith's Island. The notes appeared to me more pleasing, or rather less discordant, than those of the Purple Grackle.

Passer domesticus domesticus. HOUSE SPARROW. In the towns.

Passerculus sandwichensis savanna. SAVANNAH SPARROW. One, on Smith's Island.

Passerherbulus henslowi henslowi. HENSLOW'S SPARROW. One, at Southport.

Zonotrichia albicollis. WHITE-THROATED SPARROW. About 50 in all.

Spizella passerina passerina. CHIPPING SPARROW. Saw only 2 at Wilmington.

Spizella pusilla pusilla. FIELD SPARROW. Only 4 seen. In fact, the absence of Fringillidae as compared with the number present at this season about New York was apparent. The notes were louder, less whistled, more bell-like than those about New York.

Pipilo erythrophthalmus erythrophthalmus. TOWHEE. A few.

Cardinalis cardinalis cardinalis. CARDINAL. Twelve.

Passerina cyanea. INDIGO BUNTING. A male in transitional plumage with a flock of migrating warblers, April 14.

Piranga erythromelas. SCARLET TANAGER. Wilmington, April 14. One.

Piranga rubra rubra. SUMMER TANAGER. Three in song, April 17. Southport. Three at Orton, April 18.

Progne subis subis. PURPLE MARTIN. A colony in Southport.

Hirundo erythrogastra. BARN SWALLOW. Six.

Iridoprocne bicolor. TREE SWALLOW. Three.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW. Two.

Vireosylva olivacea. RED-EYED VIREO. Not as common as the White-eyed.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO. Two.

Vireo griseus griseus. WHITE-EYED VIREO. Generally distributed throughout this section. About 20 noted.

Protonotaria citrea. PROTHONOTARY WARBLER. I had barely recovered from the thrill of my first Egret when I saw one of these gems on the swollen base of a cypress tree, not 10 feet from the boat. I still think that it was the most beautiful bird I have ever seen. Six in all were noted, in swampy sections.

Compsothlypis americana americana. PARULA WARBLER. These birds and probably also *C. a. usneae* were common wherever there was "Spanish Moss." I saw about 50.

Dendroica aestiva aestiva. YELLOW WARBLER. Wilmington, April 14. One.

Dendroica coronata. MYRTLE WARBLER. Ten, Wilmington, April 14; two, Southport, April 17; eight, Orton, April 18; ten, Wilmington, April 19.

Dendroica dominica dominica. YELLOW-THROATED WARBLER. These were somewhat commoner than the Prothonotary Warblers and more generally distributed.

Dendroica virens. BLACK-THROATED GREEN WARBLER. Song heard at Orton Lake.

Dendroica vigorsii. PINE WARBLER. Fairly common in the long-leaf pine. Twenty-eight.

Dendroica discolor. PRAIRIE WARBLER. Occurred with the preceding but not so common.

Geothlypis trichas, subsp.? YELLOW-THROAT. One at Wilmington, April 19.

Mimus polyglottos polyglottos. MOCKING BIRD. Not nearly as common as I had anticipated. I saw not more than 25 individuals.

Dumetella carolinensis. CATBIRD. Two.

Toxostoma rufum. BROWN THRASHER. Two.

Thryothorus ludovicianus ludovicianus. CAROLINA WREN. Eight.

Troglodytes aedon aedon. HOUSE WREN. One, April 18.

Sitta canadensis. RED-BREASTED NUTHATCH. One bird at Wilmington, April 14, an unexpected find.

Sitta pusilla. BROWN-HEADED NUTHATCH. In company with the preceding and with Red-cockaded Woodpeckers. Five.

Baelophus bicolor. TUFTED TITMOUSE. Fifteen.

Penthestes carolinensis carolinensis. CAROLINA CHICKADEE. Twenty.

Regulus calendula calendula. RUBY-CROWNED KINGLET. A singing male at Orton, April 18.

Poliophtila caerulea caerulea. BLUE-GRAY GNATCATCHER. Five.

Hylocichla mustelina. WOOD THRUSH. Song heard at Wilmington, April 19.

Silalia sialis sialis. BLUEBIRD. Three.

Eastern District School, Brooklyn, N. Y.

MIGRATION AND PHYSICAL PROPORTIONS. A PRELIMINARY STUDY.

BY C. K. AVERILL

IT is a matter of common observation that birds most capable of long sustained flights are long winged. Such are the swallows and swifts on land and the terns, plovers and sandpipers along the shore.

A bird flying 35 miles per hour passes through the air at the rate of 51 feet per second and the form of the tail evidently has much to do with the resistance offered by the air. It is evident that the stream lines that pass under the body of the bird will converge at the rear of the body, striking against the tail and causing undue pressure. In birds of superior power of flight—terns, swallows, swifts, gulls, kites, the tail is either forked or it is short, in either case there is little tail beyond the end of the under tail coverts in the median line.* It is the mechanical function of the under tail coverts to fill in the angular space where the tail joins the body where without the coverts an area of reduced pressure would be formed increasing the resistance. The tail of the barn swallow,

*In the soaring hawk or eagle the large broad tail forms one of the three planes which support the body.

deeply forkate, is part of Nature's ornamental scheme and such tails occur in terns, kites, swallows, where elegance of form and beauty and great ease of flight are combined. We shall find that among similar birds the species with the longer wings has a shorter or more emarginate or forked tail.

These two points, long wing, and tail of small area we may observe in the flying bird, but if we hold our bird in the hand, be it swallow or swift, we also notice that it has small feet and legs. Apparently Nature takes pains in reducing all superfluous weight and carefully considers all trifles. Among the economies the elimination of the hind toe appears to be included. Thus in the true snipe represented by the woodcock, Wilson's Snipe and Dowitcher the hind toe is present. In the sandpipers which are much longer winged it is much smaller and in the Sanderling which seems the lightest and best formed of these birds and which makes an annual flight of 2000 miles across the ocean to the Sandwich Islands, the hind toe vanishes entirely. Again in the plover family it is present in the Lapwing and Surf-bird, rudimentary in the Black-bellied Plover and is obliterated in the Golden Plover, whose migratory flights so astonish us.

In the petrels, those long winged birds of the sea, the hind toe is minute or lacking entirely. Can these instances be regarded as fortuitous?

Along the same line we notice that the bill of our swallow or swift is extremely small although we cannot see that a larger bill would interfere with the capture of the insects which these birds feed upon. What we see is the cutting out of all surplus material.

In the terns the feet are reduced in size very much as compared with the gulls. The bill, however, cannot be reduced and be effective in catching fish. Reduction is possible only when not interfering with the life of the bird.

We have then four points of a good flier,—long wing, short tail, or tail of small area, small bill and small legs as shown by length of tarsus. It is one object of this paper to show that the better equipped birds in these respects, in any group, have a greater migratory range.

We will tabulate the genus *Helminthophila* from Ridgway's 'Birds of North and Middle America,' using measurements of

the male bird always. The first column contains the name of the bird, the second a brief statement of its range, the third the wing length, the fourth the tail length, the fifth column the difference between wing and tail lengths. It is this column that shows at a glance that the bird making the long migration, is also best proportioned for flight. Measurements in millimeters.

HELMINTHOPHILA.

Species	Range	Wing	Tail	Diff.	Cul.	Tars.
Tennessee Warb.	E. N. A. N. E. New York to to Alaska. In winter to Venezuela	64.5	42.5	22.1	9.6	16.8
Bachman's	So. States to Cent. Am.	58.9	44.2	14.7	11.4	17.3
Blue-winged	S. N. Eng. to Guatemala	60.2	46.0	14.2	10.7	17.3
Golden-winged	Mass. to Colombia	62.2	46.2	16.0	10.7	17.5
Nashville	Saskatchewan to Colombia	59.2	43.9	15.3	9.5	17.0
Calaveras	Brit. Col. to Mexico.	60.2	45.5	14.7	9.6	16.8
Virginia's	Mt. Dist. Color. to Mexico	61.2	46.0	15.2	9.4	17.0
Lucy's	Arizona and Mexico	52.1	38.6	13.5	8.4	15.5
Orange crowned	Alaska to Mexico	62.2	50.0	12.2	9.6	17.8
Lutescent	Pacific Coast—Alaska to Guatemala	59.9	47.0	12.9	9.4	18.0
Dusky	Calif. Santa Barbara Is. and adjoining mainland.	59.2	49.8	9.4	11.4	18.3

Here we see by the figure opposite the Tennessee Warbler, 22.1, that it is the bird making the longest migration. At the end of the list is the Dusky Warbler, 9.4, showing the longest tail of all and the shortest wing relatively. We notice that it carries a larger bill and tarsus than the Tennessee in accordance with what we have already said.

In the same way we may compare the Orange-crowned, Lutescent and Dusky, three races of the same species and note the better flying characteristics of the two birds that reach Alaska.

Let us in the same way make a table of the genera *Oporornis* and *Geothlypis*.

These six birds are arranged in order of their relative wing and tail lengths. With the exception of the Kentucky they also come in order of the extent of their migratory range. While the tail and wing vary greatly the bill and feet remain very much alike

in size. It is evident from this table and the preceding that the important features are wing and tail. The increase in wing length is mostly in the primaries so that the long wing is a pointed wing as in the Connecticut and Kentucky, and the short wing is a round wing as in the Yellow-throat. With the round wing goes the round tail while the long wing accompanies the even tail.

OPORORNIS AND GEOTHLYPIS.

		Wing	Tail	Diff.	Cul.	Tar.
Connecticut Warb.	E. N. A. North Mich. to Brazil	73.1	49.8	23.3	11.9	21.3
Kentucky	E. U. S. Hudson Valley to Colombia	70.1	51.0	19.1	11.9	22.3
Mourning	E. N. A. Canadian Zone, winters from Nicaragua to Ecuador	61.5	49.0	12.5	11.4	20.8
Macgillivray's	W. U. S. Breeds from Brit. Col. So. to New Mex. In winter from Lower Calif. to Colombia.	62.2	55.6	6.6	11.4	21.6
Northern Yellow-throat.	So. Canad. to Costa Rica.	55.1	49.2	5.9	11.4	20.5
Florida Yel. th't.	Gulf States. Winters in W. I.	55.2	53.0	2.2	11.5	20.7

YELLOW-THROATS.

		Wing	Tail	Diff.	Cul.	Tars.
Maryland	Atlantic Coast districts of U. S. Winters in W. I.	52.9	49.3	3.6	10.5	20.1
Northern	N. E. U. S. and S. E. Brit. Provinces. In winter to Guatemala.	55.1	49.2	5.9	11.4	20.5
Florida	Gulf States. Winters in W. I.	55.2	53.0	2.2	11.5	20.7
Western	Arid regions of U. S. In winter to Mexico.	57.5	55.8	1.7	11.3	20.9
Pacific	Pacific Coast—Brit. Col. to Calif. Winters in Cape St. Lucas.	55.8	52.6	3.2	10.3	20.4
San Blas	Mexico only.	55.3	51.1	4.2	11.4	20.8
Salt Marsh	California	52.6	48.3	4.3	10.2	19.9
Japala	Mexico	61.2	60.2	1.0	11.2	21.0

Of these eight geographical races the longest migration is made by the Northern Yellow-throat which has the shortest tail in relation to wing. It is important to notice that the southern, western and Mexican birds are all longer tailed with the exception of the salt marsh race. We often read in the text books that western races have longer tails, but it is seen in this table as well as in the others that it is the bird of limited range that has this characteristic, rather than the bird of any particular region.

It will be of interest to tabulate the whole genus *Dendroica* on account of the number of species and because we have great differences in length of annual journeys—from thousands of miles each year to zero.

DENDROICA I. BREEDING IN HUDSONIAN AND CANADIAN ZONES. IN
WINTER IN SOUTH AMERICA.

	W.	T.	Diff.	Culm.	Tars.
Blackpoll Warbler	74.2	51.3	22.9	10	19.1
Bay-breasted	73.4	53.1	20.3	10.4	18.3
Blackburnian	67.8	48.3	19.5	9.9	17.5
Yellow	62.5	44.4	18.1	10.1	18.6
Average	69.5	49.3	20.2	10.1	18.4

DENDROICA II. BREEDING IN SOUTHERN STATES. WINTER IN S. A.

	W.	T.	Diff.	Culm.	Tars.
Cerulean	65.5	45.0	20.5	9.9	16.5

DENDROICA III. ALASKA TO LABRADOR. NOT BREEDING S. OF
CANADIAN ZONE. WINTERING U. S. TO PANAMA.

Myrtle	74.1	56.2	17.9	10.	19.6
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DENDROICA IV. BREEDING IN CANADIAN ZONE. NOT REACHING SOUTH
AMERICA IN WINTER.

Cape May	66.3	47.2	19.1	9.8	17.8
Yellow Palm	67.1	54.6	12.5	9.9	20.0
Black-throated Blue	65.2	51.1	14.1	9.4	18.7
Black-throated Green	63.8	47.8	16.0	10.2	17.3
Magnolia	60.1	48.7	11.4	9.0	17.8
Average	64.5	49.9	14.6	9.8	18.3

DENDROICA V. BREEDING S. OF CANADIAN ZONE. NOT REACHING
S. AMERICA IN WINTER.

Prairie	57.6	47.8	9.8	9.4	18.3
Kirtland's	71.4	58.8	12.6	11.9	22.3
Pine	72.9	54.4	18.5	10.9	18.5
Yellow-throated	66.9	50.7	16.2	13.8	17.4
Chestnut-sided	63.3	50.1	13.2	9.6	17.8
Average	66.4	52.3	14.1	11.1	17.9

DENDROICA VI. WEST INDIAN SPECIES. NOT MIGRANTS.

	W.	T.	Diff.	Cul.	Tar.
Jamaica Yellow	65.0	50.3	14.7	10.6	20.5
Guadaloupe	58.4	45.5	12.9	10.4	19.1
Panama	66.0	49.5	16.5	11.0	20.
Adelaide's	50.	42.3	7.7	10.0	18.6
Santa Lucia	56.	51.	5.0	10.1	18.2
Cuban	58.9	49.4	9.5	10.3	16.4
Vittelline	56.8	51.0	5.8	11.0	19.8
Plumbeous	61.9	54.1	7.8	11.0	20.3
Streaked	62.8	51.1	11.7	11.3	18.8
Average	59.5	49.4	10.2	10.6	19.1

Taking the genus *Dendroica* the difference is almost entirely in wing length, the tail does not differ as it does when comparing geographical races, nor do the bill and tarsus differ much.

In this genus as in the others preceding we can certainly "pick the winner" by relative length of wing and tail. The Blackpoll is one of the most famous of all passerine birds as a migrant. Quoting from Cooke "the shortest journey any blackpoll performs is 3500 miles while those that nest in Alaska have 7000 miles to travel to their probable winter home in Brazil" and we find it showing the maximum difference between length of wing and tail 22.9. The Bay-breasted, Blackburnian and Yellow Warbler all of which reach South America in their flight show a difference of 20.3, 19.5 and 18.1 respectively.

We note that the Cerulean Warbler although it does not go far north is well proportioned for flight (difference 20.5) and it will be found that the shorter winged species neither go far north nor to South America.

I have tabulated measurements for birds of other families and the same principle seems to hold good in nearly every case, though

of course in birds such as swallows and swifts and others especially adapted for continuous flight the points I have called attention to are not noticeable. It would be useless to multiply examples as the other tables simply emphasize what I have shown in the Warblers.

SUMMARY.

We have seen that the longest migrations in any group of similar birds are made by those with longer wings, smaller tails, and smaller bills and feet, and from observation of birds of highly developed powers of flight we conclude that flight is easier for birds so proportioned.

We know that migratory flights are a tax on the strength and endurance of birds, that they cross considerable bodies of water that in order to arrive in spring with the punctuality which many of them attain, they fly under unfavorable conditions, against adverse winds, in stormy weather, and are often found exhausted by the struggle. Perhaps if we recall some of the cases of warblers in distress we have witnessed or read of we remember that such long winged species, as Blackpolls, Myrtles, Yellows, Oven birds, Water-Thrushes, fared better than the shorter winged Yellow throats, Parulas, Redstarts. It is logical to conclude that by natural selection nature develops the characteristics of good flight and the fittest survive.

If birds extended their range by sudden expeditions to some distant point then we might suppose the long winged birds had simply beaten the short winged. Perhaps to some extent this has happened. We may suppose that the Starling with its excellent wing and tail for flight will extend its range more rapidly than some bird of poor flight power. But when we look at the table of Yellow Warblers or of Parula Warblers the differences in physical proportions are so slight that it seems they could not be, as they are, important factors in acquiring range. They seem rather to be incipient developments that will increase with time.

The forked tail accompanies the longer wing in our North American migrants and is an evidence of good power of flight.

The birds of the west, those of and beyond the Rocky Mountains, while they may go far north to breed, many of them to

Alaska, do not go far south in winter since the climate of our southwestern states and that of Mexico is such that food cannot be procured at that season. Their migratory flights are so much shorter than those of our eastern birds that they have generally poorer proportions for flight these conditions being particularly noticeable in the birds of the southwestern states, where so many are resident. This region then is the metropolis for long-tailed, short-winged, large-billed and large-legged birds. The Florida races are of the same sort but much fewer in numbers.

Life for the bird is mainly a struggle for food, and this implies a struggle for room, for extension of feeding grounds and breeding places. In this struggle those with good flight abilities and vigor are found to have the widest distribution for it is written in the book of birds that the longed-winged shall inherit the earth.

406 Stratford Ave., Bridgeport, Conn.

GENERAL NOTES

Roseate Tern (*Sterna dougalli*) Breeding in Virginia.—While spending six weeks during the spring of 1920 along the coast of Virginia, I visited every island from Cobb's to Cape Charles, and was surprised and gratified to find the Roseate Tern breeding on three of these islands, namely, Cobb's, Wreck and Isaac's. They were in small groups of three or four pairs in company with Common Terns. I found them to be much more pugnacious than the Common Tern, and while darting at an intruder, would come so close that there was no doubt as to their identity. As Bailey, in his 'Birds of Virginia' does not mention this as a breeding bird of the State, I deem this fact worthy of record.—B. R. BALES, M.D., Circleville, Ohio.

Egret at South Orleans, Mass.—Mr. E. B. Mecarta, of Harwich, has given me the following facts in regard to the capture of an American Egret (*Herodias egretta*) at South Orleans, Mass. On July 26, 1920, Mr. John Kendrick saw a large white heron in a small pond near the state road, and on July 29 the bird was again noticed in the same pond flapping violently as if injured. Upon investigation the heron proved to have had one foot nearly severed probably by a snapping turtle, and was captured from a boat. Mr. Mecarta amputated the foot, and delivered the bird alive to the Curator of the Franklin Park Museum, where it was left in apparently good health on August 2. Strong southwest winds which had

prevailed for ten days may have carried the bird north. About the same time four "Portuguese Man-o-War" were picked up on South Beaches near Chatham.—R. HEBER HOWE, JR., *Chatham, Mass.*

The Louisiana Heron (*Hydranassa tricolor ruficollis*) at Cape May, N. J.—On August 1, 1920, about a mile west of Cape May, N. J., I flushed a small flock of herons containing five individuals of the Little Blue Heron (*Florida caerulea*) and one of the present species. The birds settled in a shallow pond and were flushed again at closer range. On both occasions the coloration of this bird could be distinctly seen both with the naked eye and with the binoculars, and as I am familiar with the species in the South I recognized it at once. Messrs. J. Fletcher Street and Samuel Scoville, Jr., of the Delaware Valley Ornithological Club, were with me at the time and also satisfactorily identified the bird.

During the rest of the month the Little Blue Herons were seen almost daily as well as individuals of the White Egret (*Herodias egretta*), twenty of the former and eleven of the latter being present, but on no occasion did the Louisiana Heron again appear. New Jersey has always been included in the range of this heron on the basis of the statements of Audubon and Turnbull, that it occasionally migrated that far north, but so far as I know there is no specimen extant from the State nor any definite record of its occurrence. The above record therefore is of considerable interest and is perhaps a further illustration of the benefits to be expected from the protection that is being afforded these birds on their breeding grounds on the Gulf coast.

The present summer seems to have been a good one for "White Herons," as my friend, John Treadwell Nichols, informs me that both the Little Blue and the Egret reached Long Island during August.—WITMER STONE, *Academy Natural Sciences, Philadelphia.*

The Marbled Godwit (*Limosa fedoa*) on the New Jersey Coast.—On August 9, 1920, about a mile west of Cape May, N. J., a Marbled Godwit flew past me at close range, coming from one of the small ponds on the salt meadows and making for the beach. It was disturbed however by some people walking there and did not alight, keeping on down the coast just inside the surf. About half an hour later it returned and settled on the edge of a shallow pond directly before me where I had an excellent opportunity of studying its markings. As I can find no recent records of its capture or occurrence on the New Jersey coast this observation seems worthy of record. Old gunners of twenty-five or thirty years ago speak of shooting Godwits, but it is not always clear which of the two species they had obtained. We have two specimens of the Marbled Godwit in the collection of the Academy of Natural Sciences of Philadelphia shot at Wildwood, N. J., by Dr. W. L. Abbott, September 14, 1880, but several more recent Godwit records are all the Hudsonian.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

Marbled Godwit on Long Island, N. Y.—On August 14, 1920, we had snipe-decoys set in a pool on the mainland marsh bordering Moriches Bay at Mastic, Long Island. It was about mid-morning, and hot, with a brisk southwest wind. A Marbled Godwit (*Limosa fedoa*) came in from the north, alighted with our decoys, where it spent about ten minutes, chiefly preening itself, a stone's toss in front of us, then took wing and went on to the south.

Its long bill was rose-pink for about the basal half, the rest seeming black; its legs were lead-gray in color. Coming in it called a single peculiar squawk or honk; alighted, and especially when other shore-birds flew by, it had an unloud, very goose-like honk.

In view of the rarity of this bird on Long Island, and the interest as to whether some of the extirpated species are again becoming less rare, the occurrence seems worth recording.—J. T. NICHOLS AND CHARLES H. ROGERS, *New York City*.

The Willet (*Catoptrophorus semipalmatus semipalmatus*) in Nova Scotia.—Dr. Spencer Trotter recorded ('Some Nova Scotia Birds,' 'The Auk,' Vol. XXI, No. 1, pp. 55-64, Jan., 1904) that not long before, presumably in the summer of 1903, he had found Willets conspicuous about the salt marshes near Barrington, Shelburne County, Nova Scotia, and that, although he had found no nests of the species, his son had there shot a fully fledged young Willet on the wing early in July.

In 1910 the 3rd edition of the A. O. U. 'Check-List' said of the Willet: "Breeds from Virginia (formerly Nova Scotia) south to Florida and the Bahamas." On what evidence it was then supposed that the Willet had ceased to breed in Nova Scotia between 1903 and 1910 I do not know.

E. Chesley Allen, in 'Annotated List of Birds of Yarmouth and Vicinity, Southwestern Nova Scotia' (Trans. N. S. Inst. of Sci., Vol. XIV, Part 1, pp. 67-95, Jan. 5, 1916) states of the Willet: "Summer resident, but more common during the fall migrations. They show all evidence of breeding in our locality, though I have not yet found nest or young. First appearance (5 years) May 4."

Finally, in a list of Migratory Birds Convention Act prosecutions, published in 'The Canadian Field-Naturalist,' Vol. XXXIV, No. 2, p. 36, Feb., 1920, it is stated that two residents of Central Argyle (Yarmouth County), Nova Scotia, had been convicted of shooting Willets.

My own experience with Nova Scotian Willets is practically confined to the lower valley of the Chebogue River, in Yarmouth County, where, on the extensive salt marshes and the neighboring upland fields and swamps, Willets are not uncommon, as I have known since 1911, if not earlier. The only Willet which I have seen elsewhere was one observed from a train window, June 25, 1913, when it was flying over the salt marshes at Pubnico Harbor, Yarmouth County, Nova Scotia.

I have occasionally searched for the nests or the young of the Willets, but without success until June 8, 1920, when I found a nest with four eggs

of this species, in an open swale in an upland pasture, about a quarter of a mile from the nearest salt marsh or salt water, at Arcadia, Yarmouth County, Nova Scotia, on the western side of the Chebogue River. The nest was near the junction of the River Road with Argyle Street, and was about 150 yards from each of those much-travelled highways, which were in full view from the nest-site. Several cattle occupied the pasture at the time when the nest was found. The swale in which the nest was placed was of considerable extent and was of the kind preferred as a breeding-place by Wilson's Snipe; in fact, a pair of those birds were evidently nesting there. The Willet's nest was a slight hollow in the damp ground, lined with a few dead rushes. It was surrounded by growing rushes, cinnamon fern, low blackberry bushes, and wild rose bushes, and was well concealed. The eggs agreed with standard descriptions of Willets' eggs. They and the nest were left undisturbed.

The sitting Willet flushed from the nest at my very feet, and in appearance and cries was of course unmistakable. So fast did it tear through the low growth around the nest that it left me, as further proof of its identity, two of its feathers, one of which is being forwarded to the Editor of 'The Auk' with this note.

On June 14, 1920, I found another Willet's nest, containing four eggs, at Cook's Beach, at the mouth of the Chebogue River. This nest was scantily lined with dry grass and "eel-grass" and was in a slight hollow on top of a dry, grassy knoll, about fifteen feet above high-tide mark, which was about fifty feet distant. The sitting bird was surrounded by short growing grass and strawberry plants, and by two or three small plants of Iris. It flushed from the nest at my feet, and by loud cries attracted its mate and its neighbors, so that I soon had the pleasure of seeing six Willets in the air together near me. I estimate that there were about a dozen pairs of Willets breeding along the Chebogue River in 1920, and the species is apparently to be considered not uncommon in suitable areas in southwestern Nova Scotia.

When scolding an intruder, Nova Scotian Willets seem to prefer to perch on the very top of some spruce or fir tree, where they appear strangely out of place. They also perch readily on buildings, telephone poles, and fences. For such large game birds they are not very shy, and I have seen one perch on top of a telephone pole close beside the road until I, riding along the road on a bicycle, was directly opposite it, when it flew.

Canada is making special efforts, under the provisions of the Migratory Birds Convention, to give the Nova Scotian Willets such effectual protection as shall result in their rapid increase in numbers.—HARRISON F. LEWIS, *Quebec, P. Q.*

The Willet in Nova Scotia.—In the last edition of the 'Check-List' of the American Ornithologists' Union, under the head of Willet (*Catoptrophorus semipalmatus semipalmatus*), it is stated that "Breeds from Virginia (formerly Nova Scotia) south to Florida and the Bahamas." I am glad to be able to state that this bird still breeds in Nova Scotia.

On July 6, 1920, I saw a Willet flying over the salt marshes at Pubinco, two more on the same day at Wood's Harbor—these records were made from the railway train—and on July 9, one at Barrington Passage, all in southern Nova Scotia. On July 18, on the sand flats of Barrington Bay, near Coffinscroft, I found a flock of ten Willets, and on July 25, at the same place, Dr. Spencer Trotter and I counted twenty-six of these birds.

Dr. S. K. Palten, of Boston, formerly of Yarmouth, tells me that Willets were shot in considerable numbers in the marshes at Comeau Hill, about twelve miles southeast of Yarmouth, every year. He heard of twenty-two being shot there in 1917. In 1919 some were shot and the offender prosecuted and fined at Yarmouth under the Migratory Bird Convention Law.

Mr. Harrison F. Lewis, as will be seen by his note in this number, has given the final proof of the Willets' still breeding in Nova Scotia by the discovery of two nests with eggs.—CHARLES W. TOWNSEND, M.D., 98 Pinckney St., Boston, Mass.

Breeding of the Semipalmated Plover (*Aegialitis semipalmata*) in Yarmouth County, Nova Scotia.—On June 14, 1920, at Cook's Beach, at the mouth of the Chebogue River, Yarmouth County, Nova Scotia, I found a nest and four eggs of the Semipalmated Plover (*Aegialitis semipalmata* (Bonap.)). The nest was a short distance above ordinary high-tide mark, at a point where the beach consisted of smooth gray stones of moderate size, among which had lodged enough soil to support a very scanty growth of fine, short grass. The four eggs, which corresponded in appearance with the description of the eggs of this species contained in Chapman's "Handbook of Birds of Eastern North America," 1912 edition, lay, points inward, on a few bits of seaweed, in a slight, circular depression, apparently made by the bird. They were wholly without shelter, yet so well did they blend in appearance with their surroundings that I had previously searched the beach carefully for three hours without finding them. I finally discovered them by seeing the parent Plover run to them and incubate them while I sat motionless beside some lobster-traps which were piled on the beach a few rods away. After incubating for about ten minutes, the Plover became uneasy, left the eggs, and, with short runs and frequent pauses, repeatedly approached within eight feet of me on the open beach, giving me the best of opportunities to see in detail the characteristic markings of the species. I have been familiar for many years with the appearance and notes of both the Semipalmated Plover and the Piping Plover, and, under the circumstances, could make no error in this identification. There were at least five pairs of Semipalmated Plovers at Cook's Beach on the day of my visit, all apparently breeding there, but I found one nest only belonging to that species. The nest and eggs were left untouched.

The 1910 edition of the A. O. U. 'Check-List' says that this Plover "breeds from Melville Island, Wellington Channel, and Cumberland

Sound to the valley of the Upper Yukon, southern Mackenzie, southern Keewatin, and Gulf of St. Lawrence." The Gulf of St. Lawrence does not extend south of latitude $45^{\circ} 35'$ N., while Cook's Beach is in latitude $43^{\circ} 44'$ N., so that it is evident that the breeding-range of this bird extends farther south than was supposed.—HARRISON F. LEWIS, *Quebec, P. Q.*

The Cowbird's Whistle.—During a visit of five days at Jamestown, R. I., July 3–7, 1915, I frequently heard a male Cowbird (*Molothrus ater ater*) whistle in the following manner. He gave two long whistles, inflected upward, followed by three short, quick whistles on a lower pitch. His only variation was to omit one of the long whistles. This bird interested me not a little, for in Lexington, Mass., where the Cowbird is common—especially in the spring and early summer—I have noted a remarkable uniformity in its note. The Lexington birds give one long whistle followed by two short ones—never more and never less.

I should not have ventured to call attention to this Jamestown bird, if the matter had not been brought to my memory by another Cowbird (presumably another one) at exactly the same spot in Jamestown. On May 2, 1919, as I was passing the corner of the road where I had heard the bird four years before, a Cowbird uttered a long whistle, then two short ones, and concluded the series with another long whistle. This performance was not exactly the same, to be sure, as that heard in 1915, yet it was similar to it, and, at the same time, very different from our Lexington birds. During the spring of 1919 I noticed repeatedly a similar extension in the whistling of another Cowbird, two or three miles away in Saundertown, R. I., although other Cowbirds near at hand whistled as the Lexington birds do.

A small matter, all this, perhaps, yet in the light of Mr. Saunders' illuminating demonstration in his article on Geographical Variation in Song ('The Auk,' 1919, pp. 525–528) the thought suggests itself that there may be many minor variations in bird-songs, slight in direct proportion to the distance separating varying birds. Possibly these Rhode Island Cowbirds presented a variation of a longer song of which I am ignorant, but which may be heard in the southern states.—WINSOR M. TYLER, M.D., *Lexington, Mass.*

Dance of Purple Finch.—The following description of the ecstatic movements of a Purple Finch (*Carpodacus purpureus purpureus*) is interesting in the light of recent discussion. At six-fifteen (Eastern Time) on the afternoon of May 16, 1920, my wife called my attention to a male Purple Finch fluttering among the branches of our cherry tree. A female Purple Finch was soon discovered sitting quietly in the same tree. The male remained about five feet from the female, taking short, nervous flights, raising his crest and softly uttering the call note. In a few moments the female flew down to the ground. At once the male followed and became violently excited, drawing his quivering wings out in an arc

until the ends of the primaries swept the ground. For about four or five minutes this prancing dance was continued while he drew nearer the passive female. And now when he was about two inches from and in front of her he picked up a straw, dropped it and picked up a piece of grass which hung from each side of his bill. This seemed to be the signal for the greatest agitation on his part; with ecstatic dance, full song and vibrating wings he moved slowly on beating feet, back and forth before the female; then he rose six inches in the air, poured forth glorious song notes and dropped to the ground at one side of the female. He landed on his feet but instantly took a most dramatic pose by holding stiffly his spread tail to the ground and tilting back on that support with head held high, the raised crest and carmine ruff adding to the effect. Then like a little tragedian he rolled over on his side, apparently lifeless; the song ceased and the straw fell from his bill. Up to this time the female had remained oblivious as far as outward manifestation showed, but now she turned quickly and gave the male as he lay "dead" a vicious peck in the breast, whereat he came to and flew up in the tree, a normal bird once more, and was soon singing in the usual deliberate fashion from a high perch. The female busied herself about the spot where he had just danced and soon finding the straw and grass which he had dropped she picked them up in her bill and flew into the tree where she went searching from place to place for a spot to start a nest.

I have had one other similar experience with a Purple Finch which included the dance and the straw, but without this dramatic ending. The birds which I have described above were already mated. What relation does this dance of the straw bear to the starting of the nest? At first glance it appears to the reason of man to be an elaborate attempt to stimulate the female to start building the nest.—GORDON BOIT WELLMAN. 48 *Dover Road, Wellesley, Mass.*

Breeding of the Evening Grosbeak in Manitoba.—During the week-end of May 29–June 1, while collecting at Gimli, Lake Winnipeg, I secured several specimens of the Evening Grosbeak. Besides the fact that this was a very late date for the birds in this part of the Province, I was interested to note that they all appeared to be paired, with the one exception of a male which was apparently courting a female Rose-breasted Grosbeak. They were present during the whole of the week-end and from their behaviour I judged that they were mating and preparing to nest. Knowing that I should be unable to visit the locality again before August, I mentioned the facts to my friends, Messrs. A. G. Lawrence and Harrold, of this city, asking them if they could run up in the meantime and keep their eyes open for the birds. Mr. Harrold managed to visit Gimli on July 1 and found the birds there as expected. He tells me they were fairly plentiful, but he found no nests as his time was very limited. Early in August I was myself back in Gimli, again found the Evening Grosbeak plentiful, and on August 9 collected a juvenile bird. There is therefore no doubt that they bred here.

Mr. Lawrence visited Pine Lake on the borders of Manitoba and Ontario (actually in Ontario) on July 3. He found the Evening Grosbeak in some numbers but found no nest.

Since returning to Winnipeg, Mr. Lawrence tells me that one of the orchardists at the Agricultural College told him that he had actually found the nest of an Evening Grosbeak near the college grounds. Mr. Lawrence promptly went out to see it, but the man was unable to locate it again and supposed that it had been destroyed.

My own time, from the middle of June to the beginning of August, was spent at the Manitoba University Biological Station at Indian Bay, Shoal Lake, Lake of the Woods. Indian Bay is in Manitoba, a few miles from the Ontario boundary. I saw no signs of Evening Grosbeaks till July 23, when I heard the note on one of the islands in the bay. To my surprise I found an old bird accompanied by a single young one clamouring for food. To my great regret I failed to secure either of them, as they were almost at once lost to view in the growth and were not seen again till leaving the island and out of range. On the 26th, however, on the mainland and not far from the Biological Station, I again heard the note and this time found a family of three or four being fed by the parents. I shot two of the young, but one was lost in the dense growth. Later in the day I came across yet another family of young and collected one of these. There can be no doubt that these birds were bred in the immediate vicinity as the youngest of the two I secured could not have been long out of the nest. They may have been reared on one of the islands, though the forest is so dense that they more probably had their homes on the mainland and escaped observation earlier.—WM. ROWAN, *Department of Biology, Alberta University, Edmonton, Alta., Canada.*

A Change in the Nesting Habits of the Common House Sparrow (*Passer domesticus*).—After its introduction into the National Capital, the House Sparrow bred the following spring and summer in many places. Hundreds of them made their nests in the vines on churches and elsewhere; while it was no uncommon thing to observe from three to half a dozen of their big, bulky nests in one of the street maples or other trees. They were all the more conspicuous for the reason that the birds bred so early that their nests were in evidence long before the selected trees had fully leafed out.

Then, in a year or so, followed the "sparrow-war"—a persecution to the death of these birds, carried on in the most merciless manner. Their nests were pulled out of trees and other places more rapidly than they could build them; great nets were thrown over vines on churches, houses, and other buildings after roosting time, and thousands of others fell victims to the law ordering their extermination. Various other devices were resorted to in order to destroy this poor, little, introduced feathered "pest"; but the House Sparrow had come to stay, and, owing to his long, long training in the cities of many countries and among all nations of men,

he had learned a whole lot about a good many things—especially about the importance of the matter of propagating his own species. Here in Washington, only a few years ago, he quit building, communal style, in the vines covering such “sacred edifices” as churches; he also practically gave up nesting in trees that lined the streets and avenues in all directions. As a matter of fact, the sparrow gave up his housekeeping in any such public places.

Now this year (1920) I have given especial attention to the nesting of this species here in this city, and the interesting fact has come to my notice that the bird has not built out in plain sight anywhere. I have been unable to observe the presence of a nest within the city limits. That they are nesting in as great numbers as ever there can be no doubt; for, as the weather warms up, one may note the males courting the females as usual, and both sexes gathering and flying away with materials for nest construction. However, both males and females have become extremely secretive; and whatever place a pair selects for a nesting-site, they make more than certain that no part of the nest is allowed to stick out beyond the entrance. On several occasions I watched a bird with some nesting material in its beak, to note where it flew, and thus discover where a nest would be later on. Every time I did so, however, the bird would drop what it had; in an unconcerned manner take up something else, or fly up into a tree until I took my departure. I have not seen a House Sparrow's nest in a tree in Washington this year; while twenty-five or thirty years ago one could count as many as half a dozen in a single tree, sometimes, on any of the busiest thoroughfares.—DR. R. W. SCHFELDT, *Washington, D. C.*

Notes on the Acadian Sharp-tailed Sparrow (*Passerherbulus nelsoni subvirgatus*).—On June 12, 1920, in a small salt marsh near Bunker's Island, at the southern end of Yarmouth Harbor, Yarmouth, Nova Scotia, I found the occupied nest of a pair of Acadian Sharp-tailed Sparrows. The nest proper was a neat, round cup of fine, dry, dead grass, with some horsehair in the lining. Its foundation consisted of some small masses of “eel-grass” and roots. Its dimensions were: inside diameter, 2.5 in.; outside diameter, 4.5 in.; inside depth, 1.5 in.; outside depth, 2.375 in. It was elevated above the general surface of the marsh by being placed on the top of a low, grassy ridge, about fourteen inches high, formed from material thrown up when a ditch was dug across the marsh, many years before. During some storm a mat of dead “eel-grass” had been left on top of this ridge, and this had later been lifted by the growing marsh grass, leaving several inches between it and the ground. The nest was placed at the northwest edge of this mat, about half of the nest being under it, while the other side was sheltered and concealed by grass about six inches high. The nest was not sunk in the ground at all.

Two young Sharp-tails, partly feathered, and nearly ready to leave the nest, were in their snug home, while the dried body of a third young

bird, which evidently had died soon after hatching, lay on the front edge of the nest. The living birds had their eyes open and feathers partly covering the head, back, chin, and the sides of breast and belly. A stripe over each eye and one in the center of the crown were buffy; the rest of the upper parts were fuscous, the feathers tipped with buffy; the sides of the throat were buffy, the sides of the breast whitish, streaked with fuscous, and the sides of the belly whitish. They were still so young that, when touched, they would open wide their bright red, yellow-edged mouths.

The nest was found after I had quietly watched the parent Sparrows for about an hour, while they were bringing food to their young. Most of the food appeared to be obtained on the salt marsh, within a rod or two of the nest, but the birds visited also an upland hayfield nearby. The old birds never alighted at the nest nor took flight from it, but descended and arose at various points distant from one to two yards from their home. On one occasion one of them was observed to carry off a white sack of excrement. The male sang from time to time from a piece of driftwood on the marsh about 30 feet distant from the nest. When I was examining the nest and the young birds, the parents made no demonstration for some minutes, but later they came near and uttered chip's, much like those of Savannah Sparrows. There was no difficulty in identification, as these birds, with which I have been familiar for some ten years, differ markedly in appearance and song from Savannah Sparrows or any other birds to be found in Nova Scotia.

On June 17 I again visited this nest, found it empty, and collected it. It has since been presented to the Victoria Memorial Museum, Ottawa, Ontario. When collected, the nest was thoroughly wet, evidently as a result of having been flooded by the high spring tides then occurring, there having been a new moon on June 16, for no rain had fallen at Yarmouth in the interval between my two visits to the nest. There were, of course, spring tides about June 1, the date of the previous full moon, when the nest probably contained eggs, but these would not be as high as the spring tides of the new moon, and may not have reached the nest. There is no apparent reason, however, why the spring tides accompanying the new moon of May 18 should not have been as high as those of the new moon in June and flooded the nest-site. Probably the nest was built immediately after those spring tides subsided. It would be interesting to know if this was a mere coincidence or if these birds, when nesting in salt marshes, take into account the variations in the rise and fall of the tides, and thus, indirectly, the phases of the moon!

Mr. W. H. Moore has described (Cat. of Can. Birds, Macoun & Macoun, Ottawa, 1909, pp. 507-508) some nests and eggs of this subspecies from fresh-water marshes along the St. John River in New Brunswick, but, so far as I have been able to ascertain, the present is the first description of a salt marsh nest of this species, and the first definitely identified nest

of the species recorded from Nova Scotia, where these birds are common in suitable localities in the breeding season.

On June 12, a fine, bright, windy day, Acadian Sharp-tailed Sparrows frequently delivered their flight-songs all about me during the time that I remained in their marsh, from 10.00 a. m. to 4.00 p. m. When about to sing his flight-song, the male Sharp-tail rises, on fluttering wings, diagonally upward from the marsh to a height of 25 or 30 feet, uttering meanwhile a slow series of *chip's*. He then spreads his wings and, as he sails slowly downward, utters once his husky *sh-sh-sh-ulp*, then flutters downward a few feet, with frequent *chip's*, then sets his wings and sails and sings a second time, and finally, with more fluttering and more *chip's*, descends to his perch, where he continues to sing, but is silent in the intervals between songs.—HARRISON F. LEWIS, *Quebec, P. Q.*

Notable Warblers Breeding Near Aiken, S. C.—The Swainson's Warbler (*Limnothlypsid swainsoni*) is known to nest abundantly along the swamps of the Savannah River near Augusta, Ga. The hills rise steeply on the South Carolina side of the river towards Aiken, eighteen miles away and six hundred feet above sea level. The surrounding country is rolling, sandy, farming land, with numerous small streams, and a few large mill ponds. The creek bottoms are generally heavily woodea and contain patches of dense tangled underbrush and cane (*Arundinaria tecta*).

We found the first Swainson's Warblers on April 23, 1920, two together in open woods near a mill pond. On and after May 7 we always heard two birds singing in this particular neighborhood, but were unable to find a nest. One of these birds sang continuously in a narrow strip of woods between a railroad and a high-road, paying no more attention to passing trains or trucks than did the Hooded Warblers or White-eyed Vireos. Everywhere the singing birds paid very little attention to our presence. It was our experience in every instance that we could locate and approach a singing bird without much difficulty, and that he would continue singing uninterruptedly.

After May 8 we found one or more Swainson's Warblers in every suitable locality; that is, in damp woods near running water or ponds where there were thick undergrowth and cane.

On May 23 we found a nest. It was on the side of an embankment, ten feet below a carriage road, and the same distance from a small stream. We were crossing the stream on a fallen log when we looked down and saw the bird sitting on her nest about four feet away. She watched us with no sign of fear, and slipped off her nest after we had been moving about for several minutes. There were three eggs in the nest, which was fastened securely in the tops of several stalks of cane bent over, so that the nest was four and a half feet from the ground. We returned the following mid-day. One bird was on the nest, and the mate soon approached, singing as he hopped leisurely along, and took a bath in the

stream. We walked out on the log and took several pictures of the bird on the nest. Not even the click of the camera made her move or show fear. Unfortunately the pictures were not good. Another day when we arrived no bird was on the nest, but while we were watching, about twelve feet away, she returned and settled herself on the nest. May 30 two eggs were hatched. June 2 three tiny young ones were in the nest. Some tragedy occurred that night, for the following morning the nest was empty, though apparently undisturbed, and the male was singing in the distance.

Miss Ford found another nest on July 19, about a quarter of a mile away from the first nest. It was in a tangle of cat brier vine and gall berry, about three and a half feet from the ground almost on the edge of a creek, and close to a big fallen pine, against a bank of kalmia and cane. The nest contained three young birds very nearly fledged. Both parents were fluttering and chipping nearby, but they went about their business, and during the next half hour were seen to feed the young.

On July 1, Miss Ford also watched two very young birds being fed. They were hiding on the ground in very thick underbrush, and were fed by both parents. She was attracted to the spot by the singing of the parent.

The fervent singing of Swainson's Warbler was a constant pleasure this spring. As Mr. Wayne says, "Its notes are full of sweetness, and at times it is really inspiring."

A delightful experience was on the evening of June 29. Miss Ford was with a party of friends having picnic tea on the banks of a creek, when suddenly a Swainson's Warbler burst into song. He was in plain sight about forty feet away, over the high road, on the edge of the woods. He started a chorus of song from Prothonotaries, Hooded Warblers, and White-eyed Vireos, which lasted for ten minutes, until a passing automobile broke up the concert.

Kentucky Warblers (*Oporornis formosa*) were found on June 6, and again on June 7, while looking for Swainson's Warblers. They must be shy birds, for we had not found them before, nor did we hear their song. We found two families, in deep swampy woods, eight miles apart, and in each instance we saw the birds at close range, and watched both parents feeding young birds. This is unusually far east for the Kentucky Warbler to be found nesting.

Louisiana Water-Thrushes (*Seiurus motacilla*) we found to be rather abundant. Last year Mr. Wayne recorded our finding a pair breeding at Graniteville, S. C., five miles from Aiken. This spring we saw and heard them in every suitable locality around Aiken. On April 13 we found a pair while on May 23 in exactly the same spot we saw two adults feeding and followed by their very young birds.

On May 9 we found a nest partially completed and watched the bird building it, but later visits showed that it had been abandoned. On June 1, and on June 4, in different swamps we saw adults followed by young birds.—MARION J. PELLEW AND LOUISE P. FORD, *Aiken, S. C.*

The Yellow-throated Warbler (*Dendroica dominica dominica*) at Cape May, N. J.—While examining the Pitch Pine trees in the woods at Cape May Point at the southernmost extremity of New Jersey, on July 13, 1920, in a search for some young of the Pine Warbler (*Dendroica vigorsii*), I noticed the terminal portion of a small branch in violent agitation and focusing my binoculars upon it was astonished to see an adult Yellow-throated Warbler (*D. dominica dominica*) emerge from among the needles. I watched it feeding in this tree for some little time, hoping that it might lead the way to a nest or brood of young, but it seemed concerned entirely with obtaining food for itself. Finally it disappeared behind the main trunk of the tree and apparently flew off on the far side, as further search failed to discover it anywhere in the neighborhood. Two days later a careful search was made and after about an hour the bird was seen again in the same vicinity and was secured. It was a male with sexual organs only moderately developed and as no trace of other individuals of the species, either adult or young, could be found during the remainder of the summer, it seems probable that this was simply a stray individual that had wandered a little north of its regular range. As the Blue Gray Gnatcatcher occurs regularly in the same woods and the Mockingbird not infrequently, it would not be surprising if this species occurred there occasionally as a breeder.

One specimen of this species was secured somewhere in Cape May County by the late Harry Garrett, of West Chester, and was obtained from him by Charles J. Pennock. It is now in the collection of the Philadelphia Academy, but I have not been able to learn the exact locality of its capture. These constitute, so far as I know, the only specimens that have been obtained in the State. My specimen is now also in the Collection of the Academy of Natural Sciences of Philadelphia.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

The Black-poll Warbler and Bicknell's Thrush at Yarmouth, Nova Scotia.—It appears to have escaped general notice that Mr. E. Chesley Allen, in a paper entitled 'Annotated List of Birds of Yarmouth and Vicinity, Southwestern Nova Scotia' (Trans. N. S. Inst. of Sci., Vol. XIV, Part 1, pp. 67-95, Jan. 5, 1916), stated that the Black-poll Warbler (*Dendroica striata*) and Bicknell's Thrush (*Hylocichla aliciae bicknelli*) are regular summer residents on the West Cape, at the entrance to the harbor of Yarmouth, Nova Scotia, and doubtless breed there. The West Cape is an island at high tide, but is connected with the mainland by a highway bridge. My attention was first called to the presence of these birds at this point by Mr. Allen.

On the afternoon of June 18, 1920, I spent two hours at the West Cape and, although a clouded sky and a high, chill easterly gale made conditions unfavorable for observing song-birds, I noticed six Black-poll Warblers and one Bicknell's Thrush in song. I have no doubt that I should have found many more of the warblers, which seemed to be plentiful,

had I not spent most of my time in a small area of dense spruce woods, searching for Bicknell's Thrush, which proved to be extremely shy, although I finally obtained an excellent view of it.—HARRISON F. LEWIS, Quebec, P. Q.

The Summer Resident Warblers (Mniotiltidae) of Northern New Jersey.—The past summer's field-work has added three northern warblers to the known summer resident avifauna of New Jersey,—the Nashville (*Vermivora ruficapilla*), Blackburnian (*Dendroica fusca*), and Black-throated Blue (*Dendroica caerulescens*). There was already reason to suspect the breeding of these species in this region as for two or three years past I had observed them the very end of May and, several years ago, had seen a male Blackburnian Warbler in June.

The ten days from June 11–21, as well as June 27–28 were spent in the mountains near Moe, west of the southern end of Greenwood Lake. Bearfort Mountain and the parallel ridge immediately northwest reach a height of 1400 feet, the narrow valley separating them lying about 1100 feet above sea level.

The Nashville Warbler is a common bird in this region. Eight individuals, mostly singing males, were observed between June 12 and 20, and no doubt many more could have been found had special effort been made. The white birch (*Betula populifolia*) groves bordering the heavier timber are their chosen haunts.

A male Black-throated Blue Warbler was seen on June 21, by the road up the mountain from Greenwood Lake to Moe. One has been noted in the same spot on May 31. This species proved to be fairly common in a tract of mixed hemlock and hardwood on the ridge northwest of Bearfort Mountain. Here also several male Blackburnian Warblers were found in full song and one female was observed. This spot was visited on two occasions, the 19th and the 27th. Altho no nests of any of these species were found all the circumstances indicate that they breed in the region.

The Chestnut-sided, Golden-winged, Black-throated Green and Canada Warblers and the Northern Water-Thrush are all common summer residents here, though the last named is very local. The species of more southern or general distribution are the Black-and-White, Worm-eating, Yellow, Hooded and Northern Parula Warblers, the Northern Yellow-throat, Redstart, Ovenbird and Louisiana Water-Thrush. As only a single Northern Parula was observed (on June 17) the exact status of this species is uncertain. A Yellow-breasted Chat was heard singing at the southeast foot of Bearfort Mountain near West Milford, on June 28.

There can be no further doubt that the Northern Water-Thrush (*Seiurus noveboracensis*) breeds in New Jersey. This species was common in two swamps on the mountain northwest of Bearfort, and a full-grown young bird was seen on June 27. The haunts of the two Water-Thrushes are distinct, the northern species inhabiting the swamps while its southern

relative is found along the rocky mountain brooks. On the other hand the Hooded and Canada Warblers are commonly observed together, though the latter is largely restricted to the thickets of rhododendron which is not the case with its congener.

The Canada Warbler is now known as a summer resident in three widely separated localities in northern New Jersey—Budd's Lake, Morris County (*cf.* AUK, April, 1917, p. 214), Bear Swamp, Sussex County (*cf.* AUK, Jan., 1920, p. 137) and the region here described in the northwestern part of Passaic County.

Two errors in the note published in 'The Auk' for January, 1920, may here be corrected. Bear Swamp was stated to be near "Crusoe Lake"; — this should read "Lake Owassa formerly known as Long Lake." In the last line of the first paragraph, for "p. 24", read "p. 214."—W. DEW. MILLER, *American Museum of Natural History, New York City.*

A Peculiarly Marked Example of *Dumetella carolinensis*.—In speaking of the female Catbird, Mr. Ridgway says (*Birds of North and Middle America*, Vol. IV, p. 218): "chestnut of under tail-coverts more restricted and broken through greater extension of the basal and central slate-gray." An extreme case of the restriction of the chestnut of these feathers is presented by a specimen recently captured by the writer at Washington, D. C.

At first glance, the bird presented an almost unbroken gray appearance relieved only by the black cap. This grayness was particularly noticeable on the lower tail-coverts, and it was only upon closer scrutiny that the fact was revealed that these feathers were not of solid color. Basally, there was no trace of chestnut, which was present only in the form of a very narrow edging (in no place as much as a sixteenth of an inch in width) beginning about midway of the feathers and continuing around the tips.

An examination of the specimens of this bird in the National Museum and Biological Survey collections reveals the fact, as noted by Mr. Ridgway, that while "restricted and broken" there is generally at least a terminal one-third or one-fourth of the characteristic chestnut color. In the extensive series examined, no specimen was found that even approached the one in question. The bird was otherwise normal.—FREDERICK C. LINCOLN, *Biological Survey, Washington, D. C.*

The Hudsonian Chickadee in New Jersey.—The writer has recently examined a small collection of skins of local birds made by the late Charles R. Sleight of Ramsey, New Jersey. The only specimen of unusual interest in the collection is a Hudsonian Chickadee (*Penthestes hudsonicus hudsonicus*) taken at Ramsey, on November 1, 1913, and now in the collection of the American Museum of Natural History.

Dr. Charles W. Townsend has examined this specimen and agrees with me that it is true *hudsonicus*. In general coloration it agrees closely with

birds from Homer, Alaska, except that the rump is somewhat less gray. It cannot be matched by a single skin of *littoralis*, of which I have compared a good series from Maine, New Brunswick and Nova Scotia. In the majority of these birds the cap and back are conspicuously lighter, more buffy, brown. In *P. h. nigricans* these parts are decidedly darker than in the Ramsey specimen.

It will be recalled that there was a notable southward flight of brown-capped Chickadees in the fall of 1913, the first being recorded on October 29, at South Sudbury, Massachusetts. The species was also observed in Connecticut and Rhode Island (cf. Wright, Auk, 1914, p. 236, and Griscom, *l. c.*, p. 254). According to Dr. Townsend (Auk, April, 1917, p. 160) both of the eastern races of this Chickadee, *P. h. littoralis* and *P. h. nigricans*, were represented in this migration.

The specimen here recorded is the first individual of this race ever taken or seen in New Jersey, so far as we know. In 'The Auk' for April, 1917, p. 218, the writer recorded a specimen of *P. h. nigricans* taken near Plainfield on December 31, 1916, which at that time was the first record of the species from the state. Other individuals observed during the same winter at various localities as far south as Princeton, were probably of the same race. Incidentally it may be well to note that the tail of the Plainfield specimen is very imperfect, and the measurement given by Dr. Townsend (Auk, *l. c.*, p. 163) is incorrect. *P. h. littoralis* is as yet unknown from New Jersey.—W. DEW. MILLER, *American Museum of Natural History*, N. Y.

The Plain Titmouse a New Bird for Oregon.—Among a number of bird skins recently presented to me by my friend, Professor W. M. Clayton, of Santa Ana, California, who lived at Ashland, Oregon, from 1899 to 1902, there is a skin of the Plain Titmouse (*Baeolophus inornatus*), a male shot on April 17, 1900, at Ashland, Oregon, in oak scrub. While there is really nothing unusual in the fact that the bird should be found there, since it is found in Siskiyou County, California, just south of the Oregon boundary line, yet so far as I know it has never been recorded from Oregon. Neither the A. O. U. 'Check-List,' 'The Auk,' nor the 'Birds of Oregon' make mention of it so far as Oregon is concerned. I have no access to the last volume of 'The Condor' and can not say whether a record is there to be found or not. As long, however, as no proof is forthcoming to the contrary, I believe I am entitled to hail this species as a new bird for Oregon.—W. F. HENNINGER, *New Bremen, Ohio*.

The Singing of the Ruby-crowned Kinglet (*Regulus c. calendula*). In an interesting paper entitled "Geographical Variation in the song of the Ruby-crowned Kinglet" ('The Auk,' Vol. XXXVI, pp. 525-528, October, 1919), Mr. Aretas A. Saunders has brought to the attention of the readers of this journal a constant difference which he has observed to exist between the songs of migrant Ruby-crowned Kinglets in the north-

eastern part of the United States and the songs of individuals of the same species breeding in Montana. Mr. Saunders has represented the two types of song graphically and has explained that the variation occurs in the third, final, and loudest part of the song. He says: "Eastern birds sing it as a series of triplets, the notes of each triplet rising in pitch, and the last note accented, that is, both loudest and longest in duration. Western birds sing a series of double notes, all on the same pitch, the first note of each double being the accented one."

In many widely-separated localities in the province of Nova Scotia, where this Kinglet is on its breeding-grounds, the final part of its song invariably, in my experience, corresponds with Mr. Saunders' description of the same part of the song of eastern birds as heard by him in migration farther south. Using written syllables in place of Mr. Saunders' graphs, with which I am not familiar, I should give the Nova Scotian type of ending, as *wud-a-weét*, *wud-a-weét*, *wud-a-weét*, *wud-a-weét*.

About Quebec, P. Q., which is the only place outside of Nova Scotia where I have heard the song of this bird, the species is a transient migrant only, and the songs differ much in type of ending. My interest having been aroused by Mr. Saunders' paper, I recorded the type of song-ending used by each Ruby-crowned Kinglet which I heard singing about Quebec during the spring migration of 1920. As the birds were transients, there was no way of determining identity of individual birds heard on different days, and each bird heard each day was therefore recorded as a unit. The first record was made on May 2, the last on May 31. At the close of the migration the records were grouped by classes and totalled, with the following results:

TYPE OF SONG-ENDING.

1. <i>wud-a-weét</i> , <i>wud-a-weét</i> , etc. (3 syllables, accent on third)...	1	record
2. <i>pul-é-cho</i> , <i>pul-é-cho</i> , etc. (3 syllables, accent on second)....	2	record
3. <i>jim-in-y</i> , <i>jim-in-y</i> , etc. (3 syllables, accent on first).....	50	"
4. <i>you-cét</i> , <i>you-cét</i> , etc. (2 syllables, accent on second).....	1	"
5. <i>pé-to</i> , <i>pé-to</i> , etc. (2 syllables, accent on first).....	9	"

Total number of singing birds recorded 63 "

It will be observed that:

1. All possible classes of single-accented two-syllable and three-syllable phrases, including both of those noted by Mr. Saunders (Nos. 1 and 5,) were recorded.

2. The type of phrase (No. 1) recorded by Mr. Saunders in the eastern United States and by myself in Nova Scotia was noted but once at Quebec.

3. The type of phrase (No. 5) recorded by Mr. Saunders from Montana only was the second in frequency of occurrence at Quebec.

4. The majority of the songs heard at Quebec are of a type (No. 3) not noted in Montana, Nova Scotia, or the Atlantic seaboard of the United States.

Mr. Saunders suggested that the difference in songs noted by him might be of subspecific value. The evidence presented above, showing five types of song in one northeastern locality, renders doubtful the existence of any relationship between these song-types and true subspecific characters.

It is possible, however, that these differences in song may be of use in determining the migration routes of the Ruby-crowned Kinglet. Song-type No. 1, and no other, has been recorded by Mr. Saunders from "Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, and Alabama," and by myself from Nova Scotia, but it is very rare at Quebec. Apparently, then, few of the Ruby-crowned Kinglets which migrate northward in the United States east of the Alleghany Mountains pass near Quebec; it is probable that nearly or quite all of them breed farther eastward, some of them in Nova Scotia. This tends to confirm what might be expected, for, although Quebec is about as far east as Boston, the breeding-range of the Ruby-crowned Kinglet extends more than eight hundred miles to the eastward of Quebec, and this great territory should easily accommodate in the breeding season all the individuals of the species which have migrated along the narrow Atlantic seaboard of the United States. Furthermore, if the birds which pass Quebec have not come from the eastern side of the Alleghanies, they must have come from the western side. Those who have the opportunity to compare songs of the Ruby-crowned Kinglet between the Alleghanies and the Mississippi with the records made at Quebec can assist in determining this. It seems probable that there can be proven in the case of this species a strong northeastward movement from the basin of the Mississippi to tide-water in the vicinity of Quebec; a movement which I believe to be participated in by many other species in whose cases the evidence is not yet so clear.—HARRISON F. LEWIS, *Quebec, P. Q.*

Notes from Seal Island, Nova Scotia.—In 1884, in Volume I of 'The Auk,' J. H. Langille published an interesting account of the recently described Bicknell's Thrush as found by him breeding in Seal Island, a low, spruce-covered island, twenty miles off the southeastern point of Nova Scotia. Since then the island has been visited by Bent, Job ('Wild Wings,' 1905, Chapter X), Bishop, Cleaves and other ornithologists. I stayed there from July 10 to 14 of this summer (1926) and have thought it worth while to record the present status of the birds of this interesting island.

Black Guillemots, formerly so common, have dwindled to less than a dozen pairs and Puffins are entirely extirpated. Fully a thousand Herring Gulls nest there and possibly a few Common Terns, while the burrows of Leach's Petrel are everywhere to be seen in the peaty soil of the island. Counted twenty-seven Eiders, which we disturbed from under spruce bushes and one with a brood of four downy young. Two or three pairs of Semipalmated Plover were breeding and the downy young seen. Spotted Sandpipers were common.

Of land birds I found the following, all evidently breeding: Kingbird, Northern Raven, Crow, Cowbird, Savannah Sparrow, White-throated Sparrow, Slate-colored Junco, Song Sparrow, Barn Swallow, Tree Swallow, Yellow, Myrtle and Black-poll Warblers, Maryland Yellow-throat, Redstart, Winter Wren, Acadian Chickadee, Bicknell's and Olive-backed Thrushes and Robin.

Black-poll Warblers were abundant. I found only two Olive-backed Thrushes. Bicknell's Thrush was very common in the low spruce woods. Its song always suggests to me the song of the Veery but it is more thin and wiry, as if it were played on the strings of a zither. I found the bird very tame, and I frequently watched it from a distance of five or six yards.

Mr. John Crowell, the keeper of the light for many years, and his elder daughter, Mrs. Bernice Meredith, have taken great interest in the birds of the island and their conservation, and have made a small collection of specimens which they have mounted. Among these the following are worthy of record: Purple Gallinule, Saw-whet Owl, Long-eared Owl, Mourning Dove, Black-billed Cuckoo, Scarlet Tanager and Summer Tanager. It is to be hoped that the island will be made a Bird Reservation by the Provincial Government.—CHARLES W. TOWNSEND, *98 Pinckney St., Boston, Mass.*

Some Summer Residents of Dutchess County, N. Y.—With a view to listing the resident species for Dutchess County, N. Y., and with the purpose of eventually making a zone map of these birds, the writers spent June 12, 25 to 29, and July 11 and 13, 1920, in the eastern part of the county and found conditions very different from those existing in the lower altitudes along the Hudson River. This was especially true with regard to the Mniotiltidae.

At Whaley's Lake (altitude 690 feet) in the southeastern part of the county and not more than sixty miles from New York City, we found two Bald Eagles—one fully mature bird and an immature specimen. They were seen several times flying to and from Mulkin's Hill (1200 feet) but a search failed to reveal any nest. Mr. Eaton, in 'Birds of New York,' mentions the Bald Eagle as breeding at "Whelby Pond," and it is thought that this place is undoubtedly meant.

On Niggerbush Mountain (1810 feet), near Mt. Riga Station, in the extreme northeastern corner of the county, another Eagle in dark plumage was observed.

The Warblers were especially numerous about Whaley's Lake. On about one acre of scrubby growth on the easterly slope of Mulkin's Hill at an altitude of about nine hundred feet the following were observed: Black and White, Worm-eating, Blue-winged, Golden-winged, Nashville, Chestnut-sided, Ovenbird, Maryland Yellow-throat, Canada and Redstart. About a hundred feet higher a fine Brewster's Warbler was discovered and in a swamp on the summit a Water-Thrush, presumed to be

the Louisiana, was heard scolding. Near the lake shore, at seven hundred feet, were the Yellow Warbler and Yellow-breasted Chat.

On the east side of Whaley's Lake, opposite Mulkin's Hill, where a number of hemlocks grow, the Black-throated Blue and Black-throated Green Warblers were found. These two species were, however, much more common in Turkey Hollow, in the north-eastern part of the county, and were usually met with at an altitude of about eight hundred to a thousand feet, the Black-throated Green only when there were plenty of hemlocks about.

In the Harlem Valley, between Pawling and Wingdale, on the banks of Swamp River, less than five hundred feet above sea level, a Brown Creeper was found singing both on June 27 and July 11.

On top of the Niggerbush, mentioned above, no less than five Hermit Thrushes were found singing.

The following species have therefore been added to our list of probable breeding species in this county:

Bald Eagle, one pair and one individual.

Blue-winged Warbler, one male and one fledged young.

Brewster's Warbler, one male.

Nashville Warbler, four males and one female.

Black-throated Blue Warbler, fifteen males, several females and young.

Black-throated Green Warbler, twelve males.

Canada Warbler, twelve males and several females.

Brown Creeper, one male.

Hermit Thrush, five males.

ALLEN FROST AND MAUNSELL S. CROSBY. *Rhinebeck, N. Y.*

Bird Notes from Collins, N. Y.—A male Cerulean Warbler (*Dendroica cerulea*) appeared here on May 16, 1920, the first one to be recorded for seven years.

During February two Northern Pilated Woodpeckers (*Phloeotomus pileatus abieticola*) visited the hospital woods, the first record for the species. White-winged Crossbills (*Loxia leucoptera*) were present during February and until March 3. Cardinals (*Cardinalis c. cardinalis*) continue to be seen every year on the Cattaraugus Reservation, seven being the greatest number observed in a single season.

A female Red-bellied Woodpecker (*Centurus carolinus*) was recorded May 9, the first since the winter of 1916-17, when one was reported two miles from here.

There was at no time a great wave of migration during the spring and many species usually seen were absent or extremely scarce.—DR. ANNE E. PERKINS, *Gowanda State Hospital, Collins, N. Y.*

Additions to the "Birds of Allegany and Garrett Counties, Maryland."—In Volume XXI of 'The Auk,' pp. 234-250, I published a list of birds bearing the above title, adding several species from time to time,

as subsequent visits to this beautiful region or observations of correspondents enabled me to do. Such added species were the Barn Owl, Savannah Sparrow, Mockingbird (XXVI, p. 438), and later the Winter Wren as a breeder in the highest parts of Garrett County. My last two visits in 1918 and the present year, besides revealing many interesting changes, enable me to add the following species to the list:

Guiraca c. caerulea. BLUE GROSBEAK.—On July 9, 1918, while going up the bush-bordered path on one of the hills at Cumberland, I saw a family of old and young of this species, which I had never encountered in Maryland before. As if to obviate the necessity for me to explain away the objection that they might have been Indigo-birds, a family of this species started up at the same place and joined in the commotion going on.

Sturnus vulgaris. STARLING.—In its westward invasion the Starling has now reached Cumberland. Under date of February 27, 1920, my friend, Mr. John A. Fulton, of Cumberland, wrote me that he had for several weeks noticed a flock of apparently new and strange birds about the city, but since they were silent and always flew high, he could not make them out. About this time they commenced to make their headquarters in the court house tower and in the vines on the Episcopal church, where they were recognized as Starlings. To make matters certain, the janitor of the church knocked one down with a stick, which specimen was brought to Mr. Fulton, who in turn was so kind as to send it to me. There were about 100 in the flock. Later in the spring they would spend the day along the edge of the Potomac, but for the night they would return to the above-mentioned buildings.

Iridoprocne bicolor. TREE SWALLOW.—During my residence at Cumberland with the numerous excursions into various parts of the two westernmost counties of the state, together with the several subsequent visits I had never once seen this species, not even as a migrant—probably an oversight. Therefore I was much surprised to find it this summer as a summer resident. I saw three repeatedly at Crellin, near Oakland, a mile from the West Virginia line, on June 29 and the following days. They entered holes in dead trees, which had been killed by the damming of the Youghiogheny River for sawmill purposes, resulting in a pond-like widening out of the river, which otherwise here is merely a creek. No doubt the mates were in the holes incubating eggs. The Rough-winged Swallow, which I had so far only seen in the lower parts of the region, nested in the same trees.

Passerculus sandwichensis savanna. SAVANNAH SPARROW.—I was surprised to find this bird in numbers at Accident, in the higher parts of Garrett County. I had seen it once only, in 1906, near Oakland, and here it was this year plentifully. It was not here in 1914 and 1918, because I am certain I could not have overlooked it.

Compsothlypis americana usneae. NORTHERN PARULA WARBLER. I had never seen this bird as a summer resident in the higher parts of

the region, but I saw and heard a male at Crellin, June 29, and one at Accident, July 8, 1920.

Melospiza georgiana. SWAMP SPARROW.—In a large bog between Negro and Meadow Mountains, near Accident, I found a breeding colony of Swamp Sparrows and heard their song from a small swamp near Oakland, on June 28 of this year. This extends the breeding range somewhat from that given in the 'Check-List,' where western Maryland is not included.—G. EIFRIG, *River Forest (Oak Park P. O.)*, Ill.

Rare and Unusual Birds in the Chicago Area During the Spring of 1920.—The spring of 1920 has been unusual to say the least. Many common birds were unaccountably rare, and many very rare ones were observed. The severe winter and heavy snowfall in Canada drove many birds such as the American Crossbill (*Loxia curvirostra minor*), Bohemian Waxwing (*Bombycilla garrula*), Redpoll (*Acanthis linaria*), etc., down from the north. These have been recorded by Mr. Coale and myself. Early in March we had some fine weather, and, as a consequence, a large migration of about sixty varieties of birds literally poured in from the twentieth to the thirtieth of March. Now, however, the weather took a sudden turn and we had snow-storms every few days. This of course retarded the migration dreadfully. Since the twentieth of April, however, the weather has been nice, and the migration more or less regular. A list of the rare and unusual birds which I have observed this spring follows:

Aristonetta valisineria. CANVASBACK.—On April 10, I saw one male of this species on Wolf Lake, about twenty miles south of Chicago. On April 24, I saw a flock of six birds of both sexes at the same place, and was informed by a farmer that he had seen the same flock there for two weeks. This formerly common bird is rapidly becoming rarer in our area.

Grus canadensis. SANDHILL CRANE.—On April 22, while looking for birds on the Wooded Island, Jackson Park, Chicago, I saw a large bird about fifty feet above my head, attempting to fly west against a very strong wind. I immediately looked at the bird through my glasses and was able to study it for the space of twenty minutes. It continued to struggle against the wind, but to no avail, and at last was blown out of sight to the south. The bird came within thirty feet of me at one time, and of course its identity was unmistakable. It flew with legs and neck outstretched, I was even able to discern the red on the head, and the brownish on the wings. This bird is an exceedingly rare and irregular migrant. Some weeks after seeing the bird, I met a gentleman who had observed and identified the bird on the same day.

Macroramphus griseus scolopaceus. LONG-BILLED DOWITCHER.—On May 14 I observed several birds of this species flying with a large flock of Yellowlegs (*Totanus flavipes*), at Hyde Lake. I shot into the flock and secured a fine adult female Dowitcher, which proved to belong to the

subspecies *scolopaceus*. Both Dowitchers are rather rare migrants here, but I think the Long-billed is the commoner bird. The bird mentioned above is now in my collection.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.—On April 24, I saw a flock of about fifty birds of this species in the rushes in Hyde Lake. More arrived later and to a large extent supplanted the Red-winged Blackbird (*Agelaius phœniceus*). These birds were at one time very abundant in the marshes and sloughes south of Chicago, but since the advent of the large factories and chemical plants, many of their best nesting grounds have been destroyed. At the present rate, the birds will be very rare in a few years.

Spizella pallida. CLAY-COLORED SPARROW.—On May 8, several friends and I noticed a small sparrow unlike anything else we had ever seen, at Wolf Lake. The bird was very tame, and allowed us to study it at very close range. Unfortunately I had no gun, but the brown on the sides of the head and the markings in general were so well defined and distinctive as to leave no room for doubt as to the bird's identity. This bird is an accidental straggler from the west, and has been taken in the Dunes by Mr. Stoddard.

Spiza americana. DICKCISSEL.—This bird breeds locally west of Chicago, but I have included it in this list because of the peculiar circumstances under which I saw it. On May 10, I was walking along Lake Park Ave., on my way to Jackson Park, at about five o'clock in the morning, when I noticed a flock of English Sparrows (*Passer domesticus*) across the street, and although one of the birds impressed me as very light, I paid no heed and went on. Hardly had I gone twenty yards when the birds flew across the street and two of them lit on a small tree. Now to my great surprise, one commenced to sing. I immediately retraced my steps and saw that the bird which was singing was a male Dickcissel. It seems strange to meet this bird of the fields and meadows in the heart of the city.

Dendroica discolor. PRAIRIE WARBLER.—On May 6, I saw one male of this species. The Prairie Warbler is always regarded as a rare migrant, but I have seen several in the Park.—NATHAN F. LEOPOLD, JR., 4754 Greenwood Ave., Chicago, Ill.

Items Relative to Some Costa Rican Birds. Catharista urubu braziliensis.—Apropos the articles in recent numbers of 'The Auk,' bearing on the subject of the power of the various senses of the Black Vulture. I may be allowed to record an incident, concerning the Central American form of the species, that came under observation of the writer and his wife, while located near Juan Viñas, Costa Rica, in April, 1920. We occupied a house, which was of considerable pretensions, and in good repair but had not been occupied, other than temporarily, for several years. Soon after settling there, we noted a particular Vulture, that came almost daily to the garden, surrounding the house, where it was usually to be seen perched on a fence

post, or on the roof-ridge of the house itself. One of the windows of the kitchen was usually left open. On two or three occasions the Vulture alighted on this window-ledge, but seeing some one within, quickly departed. When we were away from the house it was our custom to close the window. However, one morning, we overlooked doing so. On this occasion we left a good fire burning in the cook-stove, on which was placed a stew-pan, with cover, containing a piece of meat and portions of several kinds of vegetables.

Returning from our tramp, we were surprised to find that our prospective dinner had entirely disappeared, even to the liquid; although the pan yet remained on the stove. The cover was on the floor nearby. The stove-top had not entirely cooled when we reached the house. All too reliable evidence as to the identity of the intruder was to be found in the droppings deposited on stove and floor.

After this experience, our precautions were more rigorous, yet this bird, on one occasion thereafter, got inside the room, but we were present and nothing happened.

Picolaptes affinis neglectus.—This is one of the commonest Tree-Creepers (*Dendrocolaptidae*) over the wooded uplands of Costa Rica. The individuals of the species that came under attention here were found on the south slope of the Volcano Irazu, at about 10,000 ft. altitude, while camping there during May, 1920. A pair of birds were seen on the 11th, both working up the trunk of a large tree that grew in a heavily wooded ravine. Owing to this latter fact, I was as near as twenty-five feet of their position, before I observed them. I recognized the species at once; also noting the abbreviated tail on both, a condition that seemed to much impede their progress in climbing. I secured the ♂ of this pair. Then it was that I observed that the rectices, except the middle pair that were replaced by fresh ones, very short and mostly in the sheath, had suffered severance, about one inch from their base, by some sharp instrument, and not by reason of wear, because the shafts all showed fresh cleavage, and no fraying. Moreover, this trimming was perfectly regular, and of the form of an inverted V. The operation therefore must have been performed with bill by the bird itself. The fact that this mutilation of the tail was seen in both birds, before I had shot, eliminated the possibility of that source for a solution; aside from the seeming impossibility of shot trimming the feathers, as has been described.

Gymnostinops montezumae.—While staying at Juan Viñas, I came across many nesting colonies of this *Oropendola*, and with the assistance of my wife and a native boy, a small colony of some thirty nests was inspected about April 1, 1920. These nests were hung on a medium-sized Guava tree that stood at least one hundred feet from any other tree. Three limbs were sawed off: one supported seven nests, one three, and one but two. During this operation most of the individuals of this colony gathered in the nearest available tree, and kept up a great clatter, until a hawk (*Leptodon uncinatus*) made an unsuccessful dash

into them. This both dispersed and quieted them. Although all these nests were completed, even to the abundant supply of fresh leaves, that new nests always contain, no eggs had been laid. So the nests still attached to their respective positions were left at the base of the nesting tree.

A week later we chanced to return to the spot. The colony contained about the original number of nests hung in the tree. On the ground were the limbs in the place we had deposited them. But the only traces of the nests that had been attached were some short strands so inextricably woven about the leaves and their petioles that they defied unravelling.

Junco vulcani.—We were fortunate enough to meet with this snow-bird in considerable numbers during our visit to the Volcano Irazu. Our observations differed somewhat from those of previous observers inasmuch that we found them among the oak timber, as low as 10,000 ft. as well as above the timber line. What I wish to record is the difference in amount of plumage wear this species is subject to under varying degree of humidity, at the same relative attitude and within an area of a few square miles.

As is well known, the south slope of the Volcano Irazu, although on the Caribbean slope of the continental divide, lies in what is termed the "shadow of the Volcano," and is thus deprived almost entirely, from December to May, and to a considerable degree during the balance of the year, of the perennial moisture carrying clouds that blow in from the East and Northeast. About three miles to the east of the main crater of the Volcano is a pass, through which a road passes that leads to the Volcano Turrialba. As soon as this pass is reached, the rainfall and humidity greatly increase and it is noticeable that pastures and herbaceous vegetation generally do not dry up in the winter and spring months as they do south of Irazu. The demarcation line between the wet and dry zones is but a couple of hundred feet wide at the pass.

Such individuals of this Junco as were taken on the slope of Irazu were all in very worn plumage, that could not be matched by a single specimen that came under observation taken at the pass or to the eastward. For the most part these individuals from the humid zone were in comparatively fresh plumage, such as the species should wear at the beginning of the nesting season, and from examination of the sexual organs I judged that the breeding season was near. While I saw no young of the species during my stay (May 3 to 19, 1920) I did shoot a female on the 10th, within the dry zone, carrying a crane-fly (*Tipula*) in her bill; and another female was taken on the 6th, while I was making the trip to the crater that had her bill full of dried grass stems.—AUSTIN PAUL SMITH, *Cartago, Costa Rica.*

Observation of a Remarkable Night Migration.—A flock of birds, present in such numbers that they were continually passing across the field of the theodolite telescope, were noticed in the course of following

the track of a pilot-balloon released at this station to determine the upper-air currents on the afternoon of May 3, 1920. Since the birds appeared to be oriented in the same general direction and to be flying in compact group formation, I decided to take readings of the positions of the individuals which could be "spotted" in the telescope, with a view to determining the speed, direction and incidently the altitude of the birds.

Before giving the details of the observations I may state that no attempt has been made to come to a conclusion as to the kind of birds noted, but my belief is that they were either hawks or ducks, owing to the similarity of their mode of flight to that of the wild-goose but with more rapid beating of the wings than in the wild-goose, with whose flight I am familiar. At the distance at which the birds were observed neither color nor fine definition of type could be seen, although the spread of a single wing of the individuals seemed to approximate the size of the pilot-balloon which was last seen at about the same level as the birds were using.

Conditions were especially propitious for determining the altitude of the birds, for the clouds closely beneath which they were winging were of the cumulus type, with flat, equally elevated bases and domelike tops. Luckily the balloon rose into the base of one of these clouds and was lost to view at an altitude of 1700 meters.

Upon losing the balloon, I turned the theodolite against a background of cumulus cloud and awaited the arrival of an individual of the flock to come within the field. Some idea of the large numbers of the birds can be had from the fact that it was possible to pick up at random a space in the sky and promptly find one of the birds winging across it. The birds were more than a mile distant and efforts to see them with the naked eye were fruitless.

Both of the individuals sighted were kept in sight for 60 seconds; before a second minute-interval elapsed they had become immersed in cloud and lost to view. The first bird "spotted," whose altitude was assumed to be 1600 meters by reason of its passage under the cloud base, was picked up at azimuth 193.2° (0 equal to North, 90 equal to East), and at elevation 25.2°. Sixty seconds later it was found at azimuth 198.9°, and elevation 21.2°. The resulting track shows a ground speed of 13.2 meters per second toward azimuth 223° (SW).

The second bird was picked up at azimuth 182.3°, elevation 36.2°; sixty seconds later it was found at azimuth 189.2°, elevation 31.7°. Its resulting track shows a ground-speed of 9.3 meters per second toward azimuth 221° (SW), when an altitude of 1800 meters is assumed. This was arrived at from the fact that this bird flew into the edge of one cloud after passing indistinctly through the extreme lower side of another cumulus cloud.

As the first individual was encountering a north wind of 4.5 meters per second (as computed from the pilot-balloon run) his wing-speed was 7 meters per second. The second individual encountered a north-north-west wind of 4.0 meters per second at the 1800 meter level, hence its wing

speed was 11.5 meters per second. It was quite noticeable that the birds were being blown off-course, because of the lack of similarity between the direction in which they were headed and the direction in which they were progressing.

Emphasis should be given to the good fortune in having two factors known within narrow limits: the altitude of the cloud bases, and the nearness of the birds' levels to the cloud bases. I may add that on rare occasions birds pass singly across the field of the theodolite, but no instance of such numbers being visible in the field at one time has ever been my experience in following balloons during the past two years.

It should be remarked that there is little by which to identify the kind or even the type of bird observed. The mean diameter of the balloon was .71 centimeters, and it is estimated that the spread of a single wing of one of the birds would have completely covered the balloon. There seemed to be moderate length of neck, little or no length of tail, and no distinguishable trailing legs about these birds. The main point of interest probably is the determination beyond question of the rate of speed maintained by birds evidently flying with a fixed objective in flock or group formation.

I would add that the further observation of these birds would have been carried out had time permitted, but as the immediate despatch of upper-air data computed from the balloon run is of great urgency it was necessary to bring the theodolite sighting to a close.

The kind assistance of Mr. B. B. Whittier, Observer U. S. Weather Bureau, who checked and corroborated the readings is gratefully acknowledged.—C. G. ANDRUS, *Observer, U. S. Weather Bureau, Lansing, Mich.*

RECENT LITERATURE

Townsend's 'Supplement to Birds of Essex County.'—In 1905 the Nuttall Ornithological Club published an admirable volume on the birds of Essex County, Mass., by Dr. Charles W. Townsend which has ever since been the standard work of reference on the coastwise bird-life of Massachusetts. Fifteen years have now elapsed and the Club presents a "supplement" by the same author,¹ which is rather more than half the size of the original.

Dr. Townsend has gathered together such a vast amount of additional information during this period of years that many changes have been found necessary in the dates of occurrence and status of the species and it was thought best to reprint the entire list with the statements of the character of occurrence of each species and under these such new matter in regard to habits and life history as had been secured. Sixteen species have been added and two dropped bringing the total to 335. The nomenclature has been revised to accord with the 1910 edition of the A. O. U. 'Check-List' although one form, the Labrador Chickadee, has been included which, as explained, has not yet been recognized by the A. O. U. committee. There is a bibliography covering the years 1905-1915 and a good index.

The volume is a fitting companion to the earlier list with which it conforms in size, typography and style. The two together form not only the up-to-date list of the birds of Essex County which the author aimed to present, but a repository of first-hand observation on the habits of most of the species mentioned, which must be consulted by anyone who may be compiling an exhaustive bird biography or reading up the life history of a species for his own edification.

For the general reader however we think the introductory chapter on "Changes in the Bird Life of Essex County since 1905," will possess a peculiar interest, so well does it summarize the changes that we have all noticed, even though we but partially appreciated them, in our own neighborhoods. There has been the astonishing increase in the interest in birds and in the preservation of birds and game; the devastation of bird haunts and the driving away of certain species in the zeal of some other supposedly worthy activity—the war on the Gypsy moth in the case of Essex County, but in other places the war on the mosquito or the chestnut blight, etc.—the advent of the Italian pot-hunter; the use of the automobile by hunters in covering large areas of country in a single day; and the use of the field-glass in bird-study—indispensable in the

¹ Supplement to Birds of Essex County, Massachusetts. By Charles Wendell Townsend, M.D. With one Plate and Map. Memoirs of the Nuttall Ornithological Club. No. 7. Cambridge, Mass. Published by the Club. August [sic] 1920. pp. 1-196 [reviewed from unbound sheets].

hands of the trained observer, but disastrous in those of the "enthusiastic amateur." All these and other factors are mentioned and their influence upon bird life and bird study discussed. A half-tone plate of the Ipswich River in Wenham Swamp forms the frontispiece to the volume and the map of the county which appeared in the original list is here reproduced for handy reference.

In the whole plan of the work and its execution the author has been peculiarly happy and both he and the Nuttall Club deserve the congratulations of ornithologists upon the appearance of the volume.—W. S.

Bannerman's 'Birds of the Canary Islands.'¹—In 'The Ibis' for 1919 and 1920 Mr. David A. Bannerman has been publishing in instalments a comprehensive paper on the birds of the Canaries. The seven parts have now been issued as a separate comprising 300 pages which easily takes its place as the authoritative work on the subject.

It is based primarily upon the author's field work in the islands, he having spent a portion of every year from 1908 to 1913 in the archipelago but other material has been examined and all of the literature bearing upon the Canary Islands carefully studied. The list includes transient species as well as residents and is prepared on a definite plan consistently carried out, which materially aids anyone who may make use of it. The nomenclature is carefully worked out with a reference to the original description of each species, and the type locality. Then follow a concise statement of the nature of its occurrence in the Canary Islands; a full discussion of specimens and relationship, with pertinent quotations from various works on the birds of the Islands and from the author's personal records, all of which go to make up a very full account of the habits and distribution of each species, and finally the range is given, which in the case of resident species is divided into two paragraphs, one giving the range in the islands, and the other the range beyond the archipelago, if the species is not endemic.

In the introductory pages there is a bibliography and an itinerary of those visitors who have done the most important ornithological work on the islands. There is likewise a statement by the author of his methods, including an apology for rejecting the "nomina conservanda" of the B. O. U. 'List.' In our opinion however he is to be heartily congratulated upon his stand in this matter. Uniformity and stability in nomenclature can only be obtained by strict adherence to the rules of the International Code no matter where they lead us.

The summary and conclusions which constitute the last part of Mr. Bannerman's paper give the author's views on many of the general prob-

¹ List of the Birds of the Canary Islands with Detailed Reference to the Migratory Species and the Accidental Visitors. Parts I to VII. By David A. Bannerman. From 'The Ibis', 1919, pp. 84-131; 291-321; 457-495; 708-764; 1920, 97-132; 323-360; 519-569.

lems involved in a study of the bird life of the group. We here learn that of the 217 species recorded from the islands, 75 are regular breeders, while 142 are transients or of casual occurrence. They are further grouped (with some duplication) as Residents 61; Partial Residents (i. e., the resident population augmented at certain seasons by migrants from elsewhere) 5; Summer Visitors (nesting regularly but not wintering) 9; Winter Visitors 15; Birds of Passage 32; Annual Visitors (time of occurrence irregular) 5; Occasional Visitors 30; Rare Visitors 72. There are also given in an appendix 25 species recorded from the islands on evidence insufficient to include them in the main list, and 54 which have been recorded as Canarian birds from such unreliable sources that they may be rejected.

The author's discussion of the origin and relationship of the Canarian fauna and the problem of the origin of island faunas in general is full of food for thought. He endorses the theory that the Canary Islands were never part of the African mainland, their volcanic origin, deep water separation, and absence of terrestrial mammals and reptiles being ample evidence in the negative. The resident birds have therefore been derived from migrants which have been stranded there and remained to breed, and which have eventually become modified by the local environment. In this connection we find that 41 of the 61 resident forms are of northern European affinities and all have closely related races in the British Isles.

The differentiation of races within the Canary group is particularly interesting and as a rule we find one race of a species inhabiting the western group of islands and a different one in the far more arid eastern islands. Here the peculiar desert environment has been active, as it has in producing the pale races of birds in the desert areas of western North America. The distinct races of a few species, which we find inhabiting different islands in the western group, have been attributed by the author to successive invasions of the migrating mainland birds at remote periods, but it seems to us that this supposition is hardly necessary, since birds introduced into two islands simultaneously may select a different sort of food on each island even though the range of choice may be exactly the same, and make other selections which in course of time would be reflected in their color or size. Then too environments which may appear to us precisely similar may have elements of difference that will have a marked effect upon the birds that are brought under their influence. The most interesting of the endemic birds of the Canaries are the two forms of the blue Chaffinch (*Fringilla teydea*) which are found in the pine belts of the high mountains of Tenerife and Gran Canaria, the low grounds of which islands are inhabited by a form of *Fringilla coelebs*. These birds have no close relative anywhere and are probably the oldest species of the endemic avifauna. Mr. Bannerman suggests that an ancestral or allied species might be logically looked for somewhere in the Atlas mountains of northern Africa. It is inconceivable that such strikingly different birds could

have been differentiated on the islands from the *F. coelebs* stock and the only other alternative is that the mainland stock which originally contributed their ancestors to the islands must have become extinct or is now represented by a few lingering individuals in some remote retreat not yet discovered. Space forbids further discussion of the interesting problems touched upon by the author and his paper should be read in its entirety by those who are interested in geographical distribution.

A map and two colored plates, one of the Chaffinches and one of the Titmice, illustrate the paper which is one of the most carefully prepared and philosophic that has recently appeared. The author states in his closing paragraph that "nine-tenths of the value of a collection of birds is to be found in the deductions which we can make from it," and he is to be heartily congratulated upon the excellent way in which he has demonstrated the value of his own collection according to this maxim.—W. S.

Mathews' 'The Bird of Australia.'—The last parts of Mr. Mathews' great work continue the treatment of the Muscicapidae, covering the Australian "Robins," the "Tree Tits," "Fly-eaters," etc. In his systematic consideration of these birds the author follows his usual practice of excessive generic subdivision. In the treatment of subspecies he has improved very decidedly upon the method followed in some of the earlier parts by giving a concise statement of exactly how many races he recognizes under each species. We notice the following new forms described in the present parts, i. e., *Smicrornis brevirostris mallee* (p. 132), Mallee, Victoria, and *Wilsonavis richmondi gouldiana* (p. 143), Gosford, N. S. Wales in Part 2; and *Ethelornis cairnensis robini* (p. 151) Cape York; *E. laevigaster intermissus* (p. 160) Melville Isl., *E. l. perconfusus* (p. 161) So. N. W. Australia, and *E. cantator weatherelli* (p. 164) in Part 3.

Leavitt's 'Bird Study in Elementary Schools.'—Bulletin No. 4 of the National Association of Audubon Societies² consists of a concise summary of such information as the teacher who desires to introduce bird study in some form into the school course, will require. The bulletin is by Dr. Robert G. Leavitt of the New Jersey State Normal School and seems admirably adapted to its purpose. The economic principle of bird protection is outlined as well as the interest, pleasure and moral effect of the study. Practical instructions to the teacher follow, methods of forming Audubon Clubs, school museums, how to attract birds and how and

¹ The Birds of Australia by Gregory M. Mathews. Vol. VIII, Part 2. June 17, 1920, pp. 81–144. Part 3, August 18, 1920, pp. 145–184. London, Witherby & Co., 326 High Holborn.

² Bird Study in Elementary Schools. Bulletin No. 4. By Robert G. Leavitt, Ph.D., Head of the Department of Biology, New Jersey State Normal School at Trenton. National Association of Audubon Societies, 1974 Broadway, New York. Price, twenty-five cents. 192 pp. 44.

where to obtain books, pamphlets, and pictures illustrating bird life, etc. There are numerous half-tone illustrations from the Audubon section of 'Bird-Lore'.

As Mr. Pearson states in the foreword, teachers in New York State schools are now required by law to give some instruction in bird-study and it is likely that this will be a wide spread custom before many years pass by. In view of this fact and the extensive voluntary instruction now being given in the schools of the country, this little pamphlet of Dr. Leggitt's will be particularly welcome.—W. S.

Hudson's Recent Bird Books.—W. H. Hudson, well known for his writings on Patagonia, has recently published what is essentially a new edition of his 'Birds in a Village,' the first book written after his return to England, in 1893. The present volume bearing the title 'Birds in Town and Village'¹ has been largely rewritten and for portions of the old work which have been discarded, a series of new chapters entitled 'Birds in a Cornish Village' has been added.

The book deals with the familiar British birds and presents an intimate study of most of the species which will prove of value to the ornithologist as a work of reference while the enthusiasm of the writer will maintain the interest of any reader who may have only a slight interest in the "great out of doors." Unfortunately there is no way for one to find again the many interesting facts which he has passed in his reading and to which he may wish to refer, as no index has been provided by the publishers.

Another recent work by the same author is entitled 'Adventures among Birds'² and consists of a miscellaneous series of essays on birds that have appeared in various of the British magazines. Most of them describe tramps through various parts of England and no one who loves walking and nature can read the author's descriptions of his searches for the rarer species of birds and the aspects of the country through which he passed without having his sympathy aroused and wishing that he might follow those same paths.

As in the case of the former volume there are many observations of value scattered all through the pages. There is considerable discussion of bird song and its origin, the author differing with Mr. Witchell who ascribes the resemblances to human music which we recognize in some bird songs to mimetic ability. He considers that the Blackbird's song for instance approaches nearer to our music and that of the Grasshopper Warbler and certain other species to insect music, "simply because it is their nature" to do so. The illustrations to this book are reproductions of the Bewick woodcuts; while those of the former volume are in color

¹ Birds in Town and Village. By W. H. Hudson, F.Z.S. With Pictures in Colour by E. J. Detmold, New York. E. P. Dutton & Company, 681 Fifth Avenue, 1920, pp. 1-323. 8 plates.

² Adventures among Birds. By W. H. Hudson, New York. E. P. Dutton & Company, 681 Fifth Avenue, 1920, pp. 1-319.

from paintings by E. J. Detmold and are very pleasing in their delicacy although most of them are hardly to be considered seriously as portraits of live birds.—W. S.

'Aves' in the Zoological Record for 1917.¹—Since 1914 the Royal Society of London has been unable to continue the publication of the 'International Catalogue of Scientific Literature' but the Zoological Society has continued to publish the 'Zoological Record' and has recently issued the volume for 1917 which would have been Vol. N, Zoology of the 'International Catalogue.' The titles on Birds have been arranged by Mr. W. L. Slater, who for several years has edited this subject with commendable devotion and skill. The title number 707 as compared with 942 for 1916, the falling off of course being due to the war and its many distractions. Nevertheless, under the circumstances the number of papers is remarkable and is nearly 50 per cent. greater than those on all other vertebrates combined, nearly half as many as those relating to insects, and more than those in any group of invertebrates except insects.

As usual the papers are arranged under three main headings, 'Titles', 'Subject Index' and 'Systematic'. In the 'Subject Index' the titles are distributed under seven principal divisions: 'General', 'Structure', 'Physiology', 'Embryology', 'Ethology', 'Variation', and 'Geography'. As might naturally be expected the greater part of the publications are either faunal or systematic. The new generic and subgeneric names number 25, of which twelve were proposed by Mathews, five by Oberholser, two by Todd, and one each by Chapman, Chubb, Kuroda, Murphy, Richmond and A. Roberts, but very few of them affect North America birds. The 'Record' is indispensable to students who wish to keep in touch with current ornithological literature of the world and those who do not have access to the full volume should secure from the publishers a separate of the part relating to 'Aves.'—T. S. P.

Stresemann's 'Avifauna Macedonica'.—A collection of upwards of 3000 skins of birds representing 168 species was made in Macedonia by Dr. F. Doflein and Prof. L. Muller in 1917 and 1918 and deposited in the Zoological Museum at Munich. This collection forms the basis of the present exhaustive report² on the birds of that country by Dr. E. Stresemann.

Under each species there is a complete list of specimens, usually a large series, followed by paragraphs on the sequence of plumages, molts,

¹ Zoological Record, Vol. LIV, 1917, Aves. By W. L. Slater, M.A., pp. 1-62, December, 1919. Printed for the Zoological Society of London; sold at their House in Regents' Park, London N.W., 8. Price, six shillings.

² Avifauna Macedonica. Die ornithologischen Ergebnisse der Forschungsreisen, unternommen nach Mazedonien durch Prof. Doflein und Prof. L. Muller-Mainz in den Jahren 1917 und 1918, von Dr. Erwin-Stresemann. Mit 6 Tafeln, Munchen 1920 (July). Verlag von Dultz & Co. 8vo., pp. 1-XXIV, 1-270. [In German.]

geographic variation, individual variation, distribution and life-history, the last including field notes by Prof. Muller. There are also a bibliography and a historical introduction, an annotated list of Macedonian birds not contained in the collection and finally a nominal list of the 261 species recorded from the country with page references to the main text.

The study of the collection has been carried on with great care and a vast amount of detailed description and measurements is presented. The attention that has been given to the molts and plumages is deserving of especial commendation and it will interest American ornithologists to know that the comprehensive terminology proposed by Dr. Jonathan Dwight in this connection has been largely followed.

The nomenclature is up to date in every respect and includes references to the original description of every species as well as to the subspecies where it does not happen to be the "typical" race.

We notice only two new names proposed by the author: *Galerida cristata muhleii* (p. 62) for *Alauda ferruginea* Mühle 1844 (nec *A. ferruginea* Smith 1830); and *Budytes flavus macronyx* (p. 76), a new form from Vladivostok allied to *B. f. thunbergi*.

There are eight excellent views of Macedonia reproduced in half-tone and a number of diagrams showing variation in wing length in various species.

Dr. Stresemann is to be congratulated upon producing a report that is a model of its kind and in providing us with a thoroughly up to date work of reference upon the avifauna of a country about which we knew but little.—W. S.

Wood on the Eyes of the Burrowing Owl.—Dr. Casey A. Wood has published a valuable paper on the eyes of the Burrowing Owl¹ with a full technical description of their structure compared with that of other owls and a plate of the fundus oculi.

His conclusions are of especial interest to ornithologists. He says: "In spite of the fact that Bendire and Hudson refer to the animal as a diurnal owl, their accounts of its habits really bear out the writer's contention of a nocturnal animal with fairly good day vision, yet distinctly embarrassed, uncertain, and confused when the eyes are exposed to bright sunlight. Stress is laid by a number of observers upon the fact that this owl is seen at all times of day standing guard often on a little mound of earth in front of his burrow entrance, forgetting that as a much more interested householder, he also watches from the same post all hours of the night." Dr. Wood finds the eye structure similar in every respect to that of nocturnal animals.

¹ The Eyes of the Burrowing Owl with Special Reference to the Fundus Oculi. By Casey A. Wood, M.D., Chicago, Ill. Reprinted from Contributions to Medical and Biological Research. Dedicated to Sir William Osler, in Honor of his Seventieth Birthday, July 12, 1919, by his Pupils and Co-Workers. Svo., pp. 819-823.

Other owls as is well known spend the day at rest on some suitable perch and it is probably only the exposed habitat of this species that makes it more conspicuous at this time and invites the assumption that it is diurnal in habits. The ease with which we make unauthorized assumptions may be seen at another point in Dr. Wood's paper where following the majority of writers he says that these owls mate "probably for life" whereas Mr. Baldwin's investigations on bird breeding (cf. Auk, 1920 p.) seem to show that we have no warrant for any such assumption.

Dr. Wood's paper is most welcome as we need just such special investigation into the various organs of birds before we can hope for a proper understanding of their systematic relationships.—W. S.

Murphy on the Seacoast and Islands of Peru.—Mr. Robert Cushman Murphy has published two papers¹ descriptive of his recent trip to the Peruvian seacoast which give one an interesting account of this country and its physical features. Of especial interest to the zoologist is his discussion of the ocean currents and their effect upon the distribution of life on the Pacific coast of America. Many sketch maps show clearly how cold currents, following the coast as far south as Cape San Lucas, carry boreal types southward and how similar currents flowing northward bring antarctic types as far as northern Peru, while warm ocean streams on the west coast of Mexico, Central America and northern South America delimit the range of the tropical life found on the shores of this area. The uniformity of surface temperature on the Peruvian coast as compared with the western Atlantic and the percentage of salinity are discussed with reference to their effect upon animal life, while the climate of Lima is graphically described as well as the faunal zones of Peru dependent, as has been shown by Dr. Chapman in the case of Colombia farther north, upon winds and cloud banks quite as much as upon elevation.

Mr. Murphy's papers should be read by everyone interested in South America and its fauna as well as by students of geographical distribution, who will find in this southern continent factors which are entirely absent in North America and which are quite novel to one trained to explain everything by circumpolar temperature zones and peculiarities of local environment.—W. S.

Dr. Shufeldt's Bibliography.—The seventh and eighth installments of Dr. Shufeldt's bibliography² have appeared which bring the list down to 1918, while the introductory pages contain much biographical matter.—W. S.

¹ The Seacoast and Islands of Peru. By Robert Cushman Murphy. Parts I and II. The Brooklyn Museum Quarterly, January and April, 1920.

² Complete List of My Published Writings with Brief Biographical Notes. By R. W. Shufeldt, Medical Review of Reviews, July and August, 1920, pp. 368-377 and 437-447.

Birds of the National Parks.¹—Two years ago in referring to the Circulars of Information of the National Parks (The Auk, XXXV, p. 493, 1918), attention was called to the need of lists of the birds of Crater Lake, Mt. Rainier, Rocky Mountain, and Yosemite. Lists for the last two parks have now been supplied. In the Rules and Regulations for 1920 bird lists are included in the circulars for Rocky Mountain, Sequoia, Yellowstone, and Yosemite, and notes on twelve characteristic birds in that for Mt. Rainier. The Glacier Park list is no longer published in the circular but forms part of the special bulletin on 'Wild Animals of Glacier Park', 1918 (See The Auk, XXXVI, p. 434, 1919).

Through an unfortunate oversight the names of the authors of the Rocky Mountain and Yellowstone lists have been omitted and consequently the notes lose much of the authority which they should have when reduced to the category of brief lists in anonymous official publications in which it is impossible to ascertain the responsibility for the statements. It is evident however that Dean Babcock is the author of the list for the Rocky Mountain Park, and M. P. Skinner of that for the Yellowstone. The last mentioned list contains 200 species as compared with 194 in 1918 while the Sequoia list includes only 168 as compared with 182 two years ago. It is much to be desired that the notes in the anonymous lists should be made at least as full as those in the Yosemite list by Grinnell and Storer. Bird lists for Crater Lake, Grand Canyon, Lafayette, Mt. Rainier and Wind Cave National Parks, and also for the Muir Woods National Monument are still greatly needed.—T. S. P.

Game Laws for 1920.—The United States Department of Agriculture has issued the usual summary of the Federal, State and Provincial game laws as Farmers' Bulletin 1138², the compilation being the work of George A. Lawyer and Frank L. Earnshaw of the Biological Survey. The plan follows that of previous years. First is given a synopsis of the open seasons in the various States and Territories and the Provinces of Canada followed by a summary of the new legislation passed during the year.

The wide circulation of the information in this pamphlet will do more to save wild bird life than anything else and we trust that all who receive the pamphlet will follow the request on the inside of the cover and "show the bulletin to a neighbor."

¹ Rules and Regulations, Mount Rainier National Park (birds pp. 13-17); Ibid. Rocky Mountain National Park (birds pp. 30-36); Ibid. Sequoia and General Grant National Parks (birds pp. 26-31); Ibid. Yellowstone National Park (birds pp. 80-90); Ibid. Yosemite National Park (birds pp. 50-54). National Park Service, Dept. of the Interior, 1920. Free on application to the Director of the National Park Service, Washington, D. C.

² Game Laws for 1920. Farmers' Bulletin. 1138, U. S. Department of Agriculture. A summary of the Provision of Federal, State and Provincial Statutes. pp. 1-84 To be had on application to the Division of Publications, U. S. Dept. of Agriculture.

Why cannot every member of the A. O. U. post himself on the laws as they affect the birds of his state and make it his business to converse with as many gunners as possible and let them know in the course of conversation that he is informed on the law and is on the lookout for violators? In the case of boys or ignorant gunners actually engaged in illegal shooting or preparing to do so, the law and the penalties could be forcibly explained. Educational work of this sort carried on with a little tact will do a world of good and exemplify once more the old adage that an ounce of prevention is worth a pound of cure.—W. S.

Peters on a New Jay.—In this short paper¹ Mr. Peters describes as new the form of the Canada Jay occurring at Red Deer, Alberta, calling it *Perisoreus canadensis albescens* (p. 5). The specimens examined are in the Brewster collection, now in the Museum of Comparative Zoology, and are paler than any of the other known races.—W. S.

Chapman on *Ostinops decumanus*.²—As a result of a study of a large series of this Cacique Dr. Chapman separates the birds from Bolivia, Peru and south-western Brazil from the typical form of northern South America, as *Ostinops decumanus maculosus* (p. 26) Yungus, Bolivia, characterized by a sprinkling of yellow or white feathers over the body and wing-coverts. The most important part of his paper however is the careful study of variation which it contains. The author finds variation of several kinds represented in this species the most striking being in the shape and size of the wings and tail in male birds from the same locality, which he attributes partly to age and partly to other factors. Dr. Chapman's paper should be carefully studied by anyone contemplating further subdivision of this or allied species while it is also an important contribution to the problem of variation in general.—W. S.

Lonnberg on 'The Birds of the Juan Fernandez and Easter Islands.'³—The material upon which this paper is based was procured on the Swedish Pacific Expedition of 1916-17 by Mr. Kare Backström, zoologist of the party. From the Juan Fernandez specimens of twenty species were obtained which are described in detail by the author, the *Cinclodes* hitherto regarded as *C. fuscus* being separated under the name *C. oustaleti baeckstroemii* (p. 4). The interesting hummingbird, *Eustephanus fernandensis* was taken in various stages of molt, some indi-

¹ A New Jay from Alberta. By James Lee Peters. Proc. New England Zool. Club, VII, pp. 51-5. May 4, 1920.

² Unusual Types of Apparent Geographic Variation in Color and of Individual Variation in Size Exhibited by *Ostinops decumanus*. By Frank M. Chapman. Proc. Biol. Society of Washington, Vol. 33, pp. 25-32. July 24, 1920.

³ The Birds of the Juan Fernandez Islands.

Notes on Birds from Easter Island. By Einar Lonnberg, pp. 1-24. Extract from The Natural History of Juan Fernandez and Easter Island. Edited by Dr. Carl Skottsberg. Vol. III. 1920. [In English.]

viduals having scarcely a metallic feather and it is suggested that the so-called *E. leyboldii* is merely a seasonal condition of *E. fernandensis*. Half-tone illustrations of the latter bird and nest from photographs are presented.

A summary of our knowledge of the avifauna of these historic islands shows that thirty species are known to have occurred on them. Of these twenty-four have been recorded from Masatierra and twelve from Masafuera. Nine species are indigenous, the two humming birds, the *Anaeretes* and the Sparrow Hawk being peculiar to the former island and the *Aphrastura* and buzzard to Masafuera, although stragglers of the latter species wander across to Masatierra. The thrush and the *Cinclodes* occur on both islands. Five petrels breed on the islands and the Domestic Pigeon and California Quail have been introduced. The other birds are accidental visitors, five from the South American mainland, five roving seabirds and three migrants from the north—the Short-eared Owl, Red Phalarope and *Buteo obsoletus*.

On Easter Island specimens of six of the twelve species said to inhabit the island were obtained, two of which are described as new: *Procelsterna caerulea skottsbergii* (p. 20) and *Pterodroma heraldica paschae* (p. 23). The nesting habits of the latter species are interesting. The soil of the island where this Petrel breeds was so hard that it was impossible for the birds to construct burrows and the eggs were therefore laid directly upon the ground amongst the grass.—W. S.

Geographical Bibliography of British Ornithology.—Part 5 of this valuable reference work¹ continues the Scottish counties and includes the island groups—the Orkneys, Hebrides and Shetlands, the ornithology of which is perhaps the most interesting of any part of the British Isles. One of the works containing reference to the birds of the Orkneys bears date of 1693, while the bibliography of the birds of the Hebrides runs back to 1703. Part 6 covers Ireland and brings the work to a close.—W. S.

Spring Migration Notes of the Chicago Area.—In an attractively printed pamphlet² bearing this title Messrs. J. D. Watson, G. P. Lewis and N. F. Leopold, Jr., have presented an annotated list of the birds observed by themselves and by Messrs. Locke Mackenzie and Sydney Stein in the Chicago Area with dates of arrival for the years 1913 to 1920 inclusive. The main list contains 237 species with five others, the occurrence of which is doubtful. The list seems to be very carefully prepared

¹ Geographical Bibliography of British Ornithology from the earliest Times to the end of 1918 Arranged under Counties. By W. H. Mullens, H. Kirke Swann and Rev. F. R. C. Jourdain. Part 5, pp. 385–480 Part 6, pp. 481–558. Witherby & Co, 326 High Holborn, London. 1920.

² Spring Migration Notes of the Chicago Area. Compiled by James D. Watson, George Porter Lewis and Nathan F. Leopold, Jr. Privately printed. pp. 1–18. [1920.]

and should be of much interest to other bird students of the district, while it will also furnish a convenient comparative record for those interested in the general study of bird migration.—W. S.

Nomenclature of the Birds of Bavaria.—In 1916 appeared a list of the birds of Bavaria¹ by C. E. Hellmayr and A. Laubmann, published under the authority of the Ornithological Society of Bavaria. It comprises the list proper of 326 species and subspecies and a hypothetical list of 14 additional forms, together with a list of the genera with the type species and the method of their determination.

In the list the species are arranged systematically under the families with a reference to the original place of publication and the type locality. It is interesting in connection with our efforts toward uniformity in nomenclature to compare this list with that of British birds prepared in 1912 by Dr. Hartert and others (for comparison of this with the A. O. U. List and with the subsequent List of British Birds by the B. O. U. Committee. See 'The Auk' 1912, p. 407). We find that there appear to be only thirty cases where the lists differ either in generic or specific names and half of these are due to the lumping of genera in the British 'List' which are usually regarded as distinct, other differences are due to the unfortunate obscurity of the International Code as to whether one name precludes the use of another if it is spelled in a slightly different manner, i. e. the "one letter rule".

The general concordance of the two lists is certainly very encouraging and it would seem that a nomenclature could soon be drawn up for Europe and North America with a few concessions on either side, that would be universally acceptable.

One point in the Hellmayr-Laubmann List upon which the opinion of the present reviewer is referred to deserves further consideration, namely the fixing of the type of the genus *Colymbus* Linn. by Gray in 1855. In my remarks (Auk, 1913, p. 458) I did not realize that the edition of Linnaeus to which he referred was prior to the starting point of zoological nomenclature and we have no right to interpret "Linnaeus 1735" as "Linnaeus 1758." I am therefore of opinion that no type was legitimately selected for the genus until Baird, Brewer and Ridgway cited *C. cristatus* in the second volume of the 'Water Birds of North America' p. 425 in 1884. This reference is given by Hellmayr and Laubmann and is perfectly correct antedating the action of the A. O. U. Committee in 1886 which is given as the first selection of type in the A. O. U. 'Check-List.' The name *Colymbus* must therefore remain for the Grebes.—W. S.

¹ Nomenclator der Vogel Bayerns. von C. E. Hellmayr und A. Laubmann Im Auftrage der Ornithologischen Gesellschaft in Bayern herausgegeben von C. E. Hellmayr. Munchen May 30, 1916. pp. 1-68. [In German.]

Van Cleave's "Acanthocephala of the Canadian Arctic Expedition, 1913-1918."¹—In his paper Dr. Van Cleave states that so far as he is aware there are no published records of the occurrence of Acanthocephala in the arctic fauna of North America. "Species described by some of the early explorers have become the objects of much conjecture on the part of present-day investigators. Under the name *Sipunculus lendix*, Phipps (1774) described from an Eider Duck what is obviously a species of Acanthocephala. Soon afterward, Goeza (1782: 141) called attention to the fact that this species of Phipps is in reality an acanthocephalan. Since that time various investigators have endeavored to determine the correct disposition of this species within the group, but all of their attempts appear to be mere guesses ostensibly fostered by the desire to distribute all of the species names into groups which would at least give the appearance of a completely worked out synonymy. . . .

"Three species of fresh-water fishes, two marine fishes, and one bird constitute the entire list of acanthocephalan hosts recorded by the expedition. . . . A new species of the genus *Filicollis* [*Filicollis arcticus* Van Cleave, type host, King Eider, *Somateria spectabilis* (Linnaeus), in intestine, collected at Bernard harbour, Dolphin and Union strait, Northwest Territories, June 16, 1916; cotypes deposited in the Victoria Memorial Museum, Ottawa, Canada, and in the collection of the author at Urbana, Illinois] from the King Eider stands intermediate between the European and the North American species of this genus, but in some respects shows much closer relationship with the previously described American species. . . . A comparison of *F. arcticus* with other known members of the same genus discloses some interesting facts regarding the geographical distribution of the members of this genus. *F. anatis* is the common European representative of *Filicollis* while *F. botulus* occurs in the Eiders in the United States. *Filicollis arcticus*, n. sp., differs in definite manner from both the previously mentioned species but shows a distinctly closer relationship to *F. botulus*. . . . In *F. botulus* there are but sixteen longitudinal rows of hooks (on the proboscis) while for *F. arcticus* the writer has found twenty-two. Both of these American species lack the spherical enlargement of the proboscis characteristic of the European species.

"The King Eider, the host of *F. arcticus*, though circumpolar in its distribution, evidently does not carry the same acanthocephalan infestation throughout its range. From the West Tajmirland peninsula, von Linstow (1905: 3). [Helminthen der Russischen Polar-Expedition 1900-1903. Mem. Acad. Imp. Sc. St. Petersbourg, Serie 8, Class Physico-Math., 18: 1-17] described *Echinorhynchus pupa* from this same host

¹Report of the Canadian Arctic Expedition, 1913-18, Vol. IX: Annelids, Parasitic Worms, Protozoans, etc. Part E: Acanthocephala. By H. J. Van Cleave. Southern Party—1913-16. Ottawa: J. de Labroquerie Tache, Printer to the King's Most Excellent Majesty. 1920. Issued April 7, 1920. pp. 1-11C.

species. Unfortunately his description and his figures of this species fail to give a full enough account of the structure to enable anyone to place it with certainty in any of the genera recognized in modern taxonomy of the Acanthocephala. . . . No evidence is presented, either in his description or in his figure, which would make it seem probable that his species belongs to the genus *Filicollis*. Thus on opposite sides of the arctic circle the King Eider apparently is parasitized by Acanthocephala representing two distinct genera."—R. M. A.

Economic Ornithology in Recent Entomological Publications.—

A few recent entomological contributions contain noteworthy references to bird enemies; they relate to the following insects:

Round-headed apple-tree borer (*Saperda candida*): Losses from this insect have increased with the development of apple growing, and at present the species is a primary pest throughout the region east of the Rocky Mountains. Mr. Fred E. Brooks, author of a comprehensive bulletin¹ on this borer says: "Probably no other economic insect of equal importance has had so few natural enemies recorded definitely and specifically as has the round-headed apple-tree borer," and that personally he has never found any evidence of hymenopterous parasites. However, he goes on to say that:

"While the control effect of parasites and predacious insects on this borer is negligible, woodpeckers play an important part in holding it in check. Wherever the writer has collected specimens or made observations in borer-infested localities the work of these birds has always been in evidence. Soon after the borers hatch the woodpeckers begin to find them beneath the thin covering of bark and thereafter the birds drill for them as long as they are in the tree. In several orchards where counts were made from 50 to 75 per cent of the borers had been destroyed in this way.

"During October, 1915, 24 young borers were collected and planted in furrows gouged out of the wood beneath loosened tongues of bark on the trunk of an apple tree. A week later, when the tree was revisited for the purpose of putting a wire screen around the trunk to protect the borers from birds, woodpeckers had punctured every tongue of bark and removed the borers from beneath. Not one had escaped. In May of the same year, while pupae were being collected from an orchard, a total of 11 pupal cells were found and from every one the occupant had been removed by woodpeckers. In another case 21 pupal cells were found, 19 of which had been opened by woodpeckers and the insects removed." (pp. 29-30.)

Ribbed pine-borer (*Rhagium lineatum*): While not a serious insect pest, this species materially hastens the death and decay of injured pines. A

¹ Bul. 847, U. S. Dept. Agr. 1920.

recent writer on the subject notes¹ that: "Birds, chiefly the woodpeckers, are the most important of the predatory enemies. It is not uncommon to find infested trees where these birds have removed from one-half to two-thirds of the larvae and adults during a single winter."

Semitropical Army Worm (*Xylomyges eridania*): This insect has developed into a serious enemy of agriculture in Florida within the last few years and although complete studies of its habits and enemies have not yet been made, it has been learned that birds including the Bobwhite, Boat-tailed Grackle, Meadowlark, Bobolink and Loggerhead Shrike feed upon it to a very noticeable extent.²

Earwig (*Forficula auricularia*): This species which has been introduced into Rhode Island where it has become numerous, spread and done considerable damage is treated in an article by an English author who has collected³ the records of its capture by British wild birds. Summing them up he finds that 13 species of birds are known to have captured earwigs, most of them sparingly. Similarly there are only a few records of American birds eating these insects but in considering such cases there should be kept in mind the proportion these small groups bear to all of the food available to birds. The earwigs are a very insignificant part of the insect fauna of either England or the United States and no surprise should be felt, therefore, that they are not more often eaten by birds.—W. L. M.

The Bird Interest in Iowa Lakes.—A report valuable not only for its findings and recommendations, but especially as a voucher of deep public interest in the subject, is that upon Iowa Lakes and Lake Beds by the State Highway Commission. (250 pp. 1917.) In the first place it is most encouraging to note that in nine-tenths or more of the cases retention and improvement of the lakes is recommended. The Commission has wisely resisted clamor by drainage advocates and considering the rights of the entire public has in consequence adopted a policy of conservation. In nearly every case, the report states, in which the drainage of a lake has been petitioned, the great damage caused to crops by blackbirds which congregate in the vicinity of the lake has been set forth as one of the principal reasons why drainage was desired. A careful field investigation of these depredations was made by the State Agricultural Experiment Station and the following conclusions reached: (1) Slight damage is done to sprouting corn and that in very limited areas near nesting colonies of birds; (2) Damage to small grains is confined to the season they are in shock, is serious only when the shocks are left exposed a long time, and is restricted to small areas near groves, sloughs

¹ Hess, Walter N., Mem. 33, Cornell Univ. Agr. Exp. Sta., May, 1920, p. 379.

² Berger, E. W. Quart. Bul. State Plant Bd. Fla., Vol. 4, No. 2, Jan. 1920 pp. 27-28.

³ Brindley, H. H., Proc. Cambridge Phil. Soc., Vol. 19, 1918, pp. 175-177.

or patches of sunflowers. Within territory one mile from a lake this damage does not average more than one dollar per acre; (3) The amount of damage done to corn in the milk varies as the distance of the field from a lake, slough or grove. On farms within half of a mile of a lake about 13 per cent. of the ears were damaged, on farms from a half mile to two miles distant, 5 per cent, and on those more than two miles about one and a half per cent. The average loss on farms of the first group is about four cents per acre. The greatest damage per acre disclosed by the survey was \$17.00, and this in only one instance. Accompanying the report on field investigation is one on the contents of the stomach of 43 Red-winged and 16 Yellow-headed Blackbirds from analyses made by the Biological Survey. Twenty-six per cent of the food of the former birds and 2.7% of the latter consisted of corn. In summing up the relations of lakes, bird pests and the public it appears highly preferable that direct control measures be applied to the injurious species rather than that the lakes be drained, for the latter are not only of great value as recreation places, but also are the center of abundance of numerous species of wild birds, including valuable game birds entirely dependent upon the presence of the lakes.

In general the report reviewed gives proper weight to the hunting interests, but the suggestion is repeated in many places that water-levels must be raised to discourage dense growths of water lilies, of cat-tails, rushes and of marsh as a whole. In this connection it should be kept in mind that marsh is absolutely necessary for practically all the birds which are attracted by the lakes. It is their breeding home and no matter how desirable it may be to boating or fishing interests to have more deep, clear water, the marsh must not be sacrificed or the whole value of lake conservation from the wild life standpoint will be lost.

The report includes a useful report on the vegetation of the lakes, from which a clear idea as to their wildfowl food resources can be drawn. This part of the report is unexceptionable except for insistence on the point just alluded to, namely suppression of marsh. If the demands for recreation places cannot be compromised with the necessities of wild life, it would seem necessary to assign the lakes definitely to the one purpose or the other and treat them accordingly. While saving lakes from drainage is a conservation measure, wild life will suffer practically as much from elimination of marshes as it would from drainage. In view of the advanced attitude it has already taken on the subject of lake conservation there would seem little doubt but that the State Commission will give full weight to the interests of wild life when properly presented.—W. L. M.

Bird Liming in Lower Egypt.—An interesting paper¹ with this title is here somewhat belatedly reviewed and occasion taken to present

¹ Ministry of Public Works, Zoological Service Publ. No. 28, 1919, 9 pp.

a short list of articles on bird lime, a subject concerning which information is not always easily found. The paper reviewed is by John Lewis Bonhote and has an introduction on the need for protection of birds in Egypt by Major S. S. Flower, both members of the British Ornithologists' Union. Bird liming has been carried on in Egypt for an indefinite period with no attempts at restriction until 1912. The localities where the practice is profitable are limited, being open country on the far side of bodies of water in the paths of bird migrants. Here bushes are set up which are very attractive to the birds as furnishing perches and promising food, and in these the limed rods are placed, or V-shaped flyways are constructed in tall marsh vegetation with limed sticks at the apex. When the bird catchers are undisturbed they get large numbers of birds ranging in size up to rollers and turtle doves. The lime is made from pulp of the fruit of *Cordia mixta*. On account of cruelty connected with the practice of bird-liming, the fact that most of the birds captured are beneficial, and the illegality of the whole traffic, strenuous efforts have been made to break it up.

The following references to information on bird lime and its use are submitted. Treatments in encyclopedias are not included, but it is worth mentioning that the principal works of this class contain a fair amount of information on the subject.

Abbey, George. The Balance of Nature and Modern Conditions of Cultivation, 1909, pp. 188-190.

Anon. Bird-Lime Manufacture in Japan. Chicago Field, Vol. 8, No. 16, Dec. 1, 1877, p. 265.

C., T. Bird-lime. American Sportsman, Vol. 4, No. 16, July 18, 1874, p. 253.

Carnegie, W. Practical Trapping of Vermin and Birds. Third Ed. pp. 62-65.

Drieberg, C. Field Rats in Cultivated Land. The Tropical Agriculturist (Ceylon) Vol. 25, 1906, pp. 875-6.

Phillips, Coleman. Small Bird Nuisance. Conference of New Zealand Fruitgrowers, etc. Dunedin, June 1901. N. Z. Dept. Agr. p. 37.

The various substances reported to be used in the manufacture of bird-lime include; inner bark of European holly and of the mochi tree of Japan, presumably the whole plants of mistletoe and distaff thistle, fruits of the genus *Cordia*, wheat flour, linseed and fish oils and Venice turpentine.—W. L. M.

The Ornithological Journals

Bird-Lore. XXII, No. 4. July-August, 1920.

Photography of the Scarlet Tanager. By C. W. Leister.—An admirable series of pictures of a very difficult subject.

A Gnatcatcher's Troubles. By R. D. Book—Account of its nest building in Ohio.

A Curious Nesting Habit of the Tufted Titmouse. By James P. Baker, Jr.—Collecting hairs from a man's head as well as from a dog and a squirrel. The taking of hairs from a live squirrel has been previously described in 'The Auk' for 1897, p. 325.

The Starling and the Bobolink are the species whose migration and plumage are discussed in this issue and form the subject of a color plate by Fuertes.

In the Audubon and School Departments is an excellent article on the study of birds' eggs by Dr. Arthur A. Allen and an account of a visit to some of the bird refuges of North Carolina, Louisiana and Texas, by T. Gilbert Pearson.

The Condor. XXII, No. 3. May-June, 1920.

The Home Life of the Western Warbling Vireo. By Henry J. Rust.—An admirable account of the nest building and rearing of the young of this species in northern Idaho, well illustrated.

Autobiographical Notes. By Henry W. Henshaw.—This instalment brings to a close this notable autobiography which we hope may be instrumental in bringing others of our older ornithologists to record their recollections in the same delightful way that Mr. Henshaw has done, before it is too late. It really seems to us a duty that they owe to American ornithology, the record of the development of which can be preserved in no other way.

The Existence of Sea Birds a Relatively Safe One. By Joseph Grinnell.

A Return to the Dakota Lake Region. By Florence M. Bailey (concluded).

The Condor. XXII, No. 4. July-August, 1920.

In Memoriam: Frank Slater Daggett. By Harry S. Swarth.

Variations in the Song of the Golden-crowned Sparrow. By Frank N. Bassett.—In musical notation carefully tested with a pitch-pipe.

Additional Notes on the Avifauna of Forrester Island, Alaska. By George Willett.

Observations on the Habits of the White-winged Dove. By Alexander Wetmore.—A valuable report on the habits and economic status of the species based upon field observations conducted under the auspices of the Biological Survey.

A New Parmigan from Mount Rainier. By Walter P. Taylor.—*Lagepus leucurus rainierensis* (p. 146), Mount Rainier, Washington.

The California Race of the Brewer Blackbird. By J. Grinnell.—*Euphagus cyanocephalus minusculus* (p. 153), Palo Alto, California.

The Oologist. XXXVII, No. 6. June, 1920.

Annotated List of the Birds of Brooke County, W. Va. Part II. By G. M. Sutton, Part III in July issue.

The Oologist. XXXVII, No. 8. August, 1920.

Days with the Cerulean Warbler. By S. S. Dickey.—Account of its breeding in southwestern Pennsylvania with detailed description of eight nests.

North Dakota Birds of Coulee and Moraine. By P. B. Peabody.

The Ibis. (II Series.) II, No. 3. July, 1920.

List of the Birds of the Canary Islands, with detailed references to the Migratory Species and the Accidental Visitors. By David A. Bannerman. Part VII. Summary and General Conclusions. (See antea p. 607.)

A Nominal List of the Birds of Siam. By Count Nils Gyldenstolpe. (continued).

Notes on South African Accipitres. By C. G. Finch-Davies (concluded).—*Tinnunculus rupicolus rhodesi* (p. 620), Matope Hills, Rhodesia.

Notes on the Birds of North-east Chihli, in North China. By J. D. D. LaTouche.

Some Observations on the Birds of Islands of Milos, Lemnos and Imbros, Aegean Sea. By J. H. Stenhouse.

On Some West Australian Birds collected between the North-West Cape and Albany (950 miles apart). By Thomas Carter With Nomenclature and Remarks by G. M. Mathews.

On a Doubling of the Central Tail-feathers in a Bird-of-Paradise. By J. A. Bierens de Haan.

Bulletin of the British Ornithologists' Club. No. CCLI. May 31, 1920.

Lord Rothschild exhibited a life size restoration of the Moa, *Dinornis maximus*, and exhibited a specimen of his *Ifrita coronata* from New Guinea which proves identical with *Todopsis kowaldi* deVis. He demonstrated that the bird had no close relation with *Todopsis* and that it must therefore be called *Ifrita kowaldi*.

Mr. P. A. Buxton presented a revision of the Persian races of *Sitta rupicola* and *S. neumayer*.

Dr. Hartert described a new woodpecker, *Campethera loveridgei* (p. 139) from Morogoro, East Africa.

Mr. C. W. Mackworth-Praed described five new races of African Francolins and Mr. N. B. Kinnear, a new nuthatch from Mt. Victoria, Burma.—*Sitta europaea griseiventris* (p. 142).

Bulletin of the British Ornithologists' Club. No. CCLII. June 30, 1920.

A number of rare books and pictures were exhibited which are listed.

Dr. Ticehurst described the Egret Farms of Sind about which he had gathered much information, but Mr. Stuart Baker said that the number of plumes obtained from this source was infinitesimal as compared with those from killed birds.

Mr. Charles Chubb described: *Atticora fucata reraimae* (p. 155) from Mt. Roraima, British Guiana; and *Henicorhina leucosticta huxwelli* (p. 156) from Elvira, east Peru.

Dr. Ticehurst described *Crateropus terricolor sindianus* (p. 156) from Karachi, Sind, and *Prinia flaviventris sindianus* (p. 157) from Sukker, Sind.

British Birds. XIV, No. 1. June, 1920.

Notes on Slavonian Grebe. By A. D. DuBois.—Reprinted from 'The Auk' XXXVI.

Manx Ornithological Notes. By P. G. Ralph.

Notes on the Harlequin Duck. By Charles E. Alford.—On the coasts of British Columbia.

British Birds. XIV, No. 2. July, 1920.

Notes on Somersetshire Ravens. By Stanley Lewis.—Detailed observations at a nest site on the cliffs of Cheddar.

British Birds. XIV, No. 3. August, 1920.

Bird Tracks in the Snow. By Richard Clapham.—With interesting photographs.

Notes on a Pair of Bee-eaters in Scotland. By J. Kirke Nash.—The pair actually started nesting when the female was caught by a local gardener and died in captivity.

Avicultural Magazine. (III Series) XI, No. 6. June, 1920.

Birds of Paradise in Captivity. By A. S. LeSouef.—Six species in the Zoological Park at Sydney, Australia.

Avicultural Magazine. (III series) XI, No. 7. July, 1920.

The Nesting of the Pilot Bird (*Pycnoptilus floccosus*). By S. A. Lawrence and R. T. Littlejohns.—In Victoria.

Avicultural Magazine. (III Series) XI, No. 8. August, 1920.

Buff-backed Herons. By J. L. Bonhote.—On Herons in captivity in Egypt.

The Emu. XIX. Part 4. April, 1920.

The Rufous Scrub-Bird. (*Atrichornis rufescens*) in Queensland. A New Subspecies. By H. L. White.—*A. r. jacksoni* (p. 258), Macpherson Range.

Haunts of the Rufous Scrub-Bird (*Atrichornis rufescens* Ramsey)—Discovery of the female on the Macpherson Range, S. E. Queensland. By S. W. Jackson.—This article is a detailed account of the search for the bird described in the preceding paper, but curiously enough the new name is not employed in the title of either which is to say the least confusing. No matter what races of the bird may be recognized Mr. Jackson has presented a most valuable contribution to our knowledge of this rare type and has illustrated it with some excellent pictures of its wonderful environment. There are interesting accounts of other species met with on the trip.

New Sub-species of *Pachycephala olivacea*. By H. L. White.—*P. o. macphersonianus* (p. 273), Macpherson Range, Queensland.

Field Notes on the Painted Honey-eater. (*Entomophila picta*.) By J. S. P. Ramsey.

The Tasmanian and New Zealand Groups. By Robert Hall.—A rather elaborate discussion of the faunae of these islands and comparison with that of the Australian-Papuan region.

Wilson's Promontory (Victoria) and its Wild Life. By Charles Barrett.—This region comprising approximately 100,000 acres is now a National Park carefully guarded by competent rangers. A list of the birds so far recorded from it is appended.

Birds of the Mount Compass District, South Australia. By Edwin Ashby.

Notes on Parasitism. By H. Stuart Dove.

Colour-Sense in Satin Bower-Birds. By H. V. Edwards.—Seem to show a marked preference for blue objects when gathering materials for their bower.

Variation in the Albatrosses and Petrels. By Leverett M. Loomis.—Consists mainly of a rewriting of matter already published in 'The Auk', one of the illustrations having already appeared there although the fact is not mentioned.

In 'Camera Craft Notes' there are several interesting photographic reproductions including one of a young Little Penguin.

The Austral Avian Record. IV, No. 1. May 27, 1920.

Dates of Ornithological Works. By G. M. Mathews.—This is a condensed reprint of the author's valuable article in his Appendix to the 'Birds of Australia', which is now rendered available to all.

The Austral Avian Record. Vol. IV, No. 2 and 3. July 28, 1920.

Avian Taxonomy. By G. M. Mathews and Tom Iredale.—This paper consists mainly of a scheme of classification of the birds of the world running down to families. The authors give no reasons for their departure from current systems where they differ from these, though as a matter of fact there does not seem to be much that is original in their scheme, except in the rank which they give to different groups. One is rather surprised to see the list bristling with "suborders" and "super-families" when they refuse to make use of "subgenera" which, in the opinion of many, would so adequately express their ideas on the proper grouping of species without completely upsetting our nomenclature. The authors are not always very clear in the wording of their introductory pages, but they seem to have an ill-concealed contempt for the anatomist, especially if he be not an ornithologist, as they say: "A complication has been present in the peculiar usurpation of recent taxonomies by individuals ignorant of avian forms. We have been quite unable to appreciate the reasons for acquiescence in the unmerited dogmatism of such writers, whose inability to understand avian evolution has been disguised by the usage of barbaric terms." Following this comes the astonishing statement that "only three taxonomists have dealt with bird classification in a scientific manner, viz., Stejneger, Sharpe and Shufeldt, and these were more or less confused by the peculiarities proposed by their predecessors, and could not deal clearly with the matters in view." With all due respect and admiration for the three gentlemen mentioned we can hardly accept this statement of Messrs. Mathews and Iredale and

we think that the chosen three would be the last to ignore the labors of the illustrious group who have been denied admission to this inner circle.

Systematic ornithology so far as it is concerned with the separation of species and geographic races and the scouring the literature for the names that have been bestowed upon them is one thing; but the working out of the evolution of the general groups and their proper relationship is quite another. One is as important as the other, but each requires a man trained in that particular field and to obtain the most reliable facts in the second line of research we must of necessity look for help to the zoologist whose knowledge extends beyond the limits of the Aves.

The same authors have a "name-list" of the birds of New Zealand and the first instalment of a similar list for those of Australia, which complete this issue of the Record.

The South Australian Ornithologist. V, Part 2. April, 1920.

The Birds of Rivers Murray and Darling and district of Wentworth.

By A. Chenery and A. M. Morgan.

Some Weights and Temperatures of Birds. By A. M. Morgan.

Eudromias australis. The Australian Dottrel. By J. McNeil Gilp.

Revue Francaise d'Ornithologie. No. 133. May, 1920. [In French.]

Contribution to a Study of the forms of *Bubo ascalaphus* in North Africa. By L. Lavauden.

Revue Francaise d'Ornithologie. No. 134. June, 1920.

An Amateur Bird Guide for One Visiting Africa. By Dr. Millet-Horsin. (Continued in the two following numbers.)

Revue Francaise d'Ornithologie. No. 136. August-September, 1920.

A New Subspecies of *Accentor* from France.—A Reprint of Harper's article on *Prunella modularis mabbotti*.

Birds Observed in Tunis, May 8-June 8, 1920. By M. Morgue.

Destruction and Reaction. By Rene Deschiens.—Killing of Terns and Gulls as "Game" and the need of a revision of the legal term.

L'Oiseau. I, No. 6. June, 1920. [In French.]

The Oriole (*Oriolus galbula*) in Captivity. By A. Mercier.

On *Trichoglossus rubritorques*. By G. Ollivry and A. Decoux.

Reprint of Horsfall's paper on the Sage Grouse.

L'Oiseau. I, No. 7. July, 1920.

Rearing of *Merula bouboul*. By Westley T. Page.

Notes on Methods of Procuring Insects Necessary for Bird Food. By G. Foucher.

Ornithologische Beobachter. XVII, No. 10. July, 1920. [In French and German.]

The Taxonomic Signification of Qualitative Characters. By E. Stresmann.

Ornithologische Beobachter. XVII, No. 9. June, 1920.

Report for the Swiss Central Station for Bird-banding for 1917-1918. By A. Hesse.

Le Gerfaut. X, No. 2. 1920. [In French.]

The Birds of Devon compared with those of Belgium. By Th. Bischoff.

Proceedings of the Bavarian Ornithological Society. XII, No. 4. May 15, 1916. [In German.]

On the Nomenclature of Our Kingfisher. (*Alcedo ispida*.) By A. Laubmann.—*Gracula atthis* Linn. is found to be the Egyptian form of *Alcedo ispida* and having anteriority all of the races become subspecies of it and the European bird will be *A. atthis ispida*.

Wood Owl Duet. By Carnel Schmitt.

On the Forms of *Corvus coronoides* Group. By E. Stresemann. Twenty races are recognized of which three are described as new: *C. c. connectens* (p. 281), Loo Choo Islands; *C. c. madarazi* (p. 285), Colombo, Ceylon; *C. c. hainanus* (p. 286), Hoihow, Hainan.

Proceedings of the Bavarian Ornithological Society. XIII, No. 1. February 25, 1917.

Three Contributions to the Nomenclature of European Birds. By C. E. Hellmayr.—Reviews of the B. O. U. List, Reichenow and Hesse's New List of German Birds, and Studer and von Burg's Catalogue of the Birds of Switzerland.

A New Name for *Alcedo grandis* Blyth. By A. Laubmann.—Becomes *A. hercules* (p. 105), the old name antedated by *A. grandis* Gm.

Descriptions of Six New Neotropical Birds with Remarks on *Ampelion cinctus* Tsch. By C. E. Hellmayr.—*Ateleodacnis speciosa amazonum* (p. 106), Tarapoto, Peru; *Cyanolyca viridicyana cyanolaema* (p. 107), Chuhuasi, Peru; *Molothrus badius bolivianus* (p. 108), Chuquisaca, Bolivia; *Philydor ochrogaster* (p. 111), Chanchamayo, Peru; *Siptornis berlepschi* (p. 113); Chicani, Bolivia; *Grallaricula nana olivascens* (p. 117); Galipan, Venezuela. *Ampelion cinctus* Tsch. becomes *Ampelioides tschudii* (Gray), the specific name being invalidated by *Ampelis cincta* Kuhl while the genus now employed is the earliest of several that have been proposed for it.

Proceedings of the Bavarian Ornithological Society. XIII, No. 2. September 20, 1917.

On Mixed Flights of Birds. By E. Stresemann.—In the East Indies.

The Calls of the Swift. By H. Stadler and C. Schmitt.

Sitta europaea homeyeri Hart. and Related Forms. By I. van Domaniewski.—See also XVI, No. 2, p. 139 for other views on its relationship.

On the Nomenclature of Palaeactic Crows. By C. E. Hellmayr.

Miscellanea Ornithologica. By C. E. Hellmayr.

(V) Two New Neotropical Tracheophones—*Hypolophus bernardi cajamarcae* (p. 188), Cajamarca, Peru, and *Sittasomus griseicapillus reiseri* (p. 190), Pedrinha, Brazil. (VI) On Some Types of Coerebidae. (VII) On Synonymy and Nomenclature. *Tangara lutei* (p. 198) pro-

posed for *Calliste melanotis* Sel.; *Leptopogon taczanowskii* (p. 198) for *L. rufipectus* Tacz.; *Euchlornis riefferii signata* (p. 199) for *Ampelis viridis* d'Orb. Lafr.; *Automolus roraimae* (p. 199) for *Philydor albigularis*, Tsch. *Accipiter gultifer* (p. 200) for *A. guttatus* auct. Also many changes in names.

A New Raven-Crow from Japan. By A. Laubmann.—*Corvus corone interpositus* (p. 201), Hondo.

Proceedings of the Bavarian Ornithological Society. XIII, No. 3. May 25, 1918.

Geographic Variation in the forms of *Corvus cornix*. By A. Laubmann. Six races recognized.

An Analysis of the Song of the Creeper. By H. Stadler and C. Schmitt.

Miscellanea Ornithologica. By C. E. Hellmayr. (VIII) The Forms of *Rhodinocichla rosea* are recognized, *R. r. harterti* (p. 304), Bogota, being described as new. (IX) A New Tyrant from Bolivia, *Leptopogon superciliaris albidiventer* (p. 305) Quebrada, Bolivia. (X) Remarks on the type of *Pitta angolensis* and the Ethiopian Pittas. (XI) Two New Woodpeckers from British Guiana. *Chloronerpes rubiginosus guianae* (p. 314) Yuruani River, Venezuela; *Veniliornis kirkii monticola* (p. 315) Roraima.

Proceedings of the Bavarian Ornithological Society. XIII, No. 4. November 25, 1918.

On the Wing Sound of the Golden-eye (*Glaucionetta c. clangula*). By H. Mayhoff.

Proceedings of the Bavarian Ornithological Society. XIV, No. 1. June 26, 1919.

Note on *Centropus rectunguis* and Related Species. By E. Stresemann.

On the European Creepers. By E. Stresemann.—An elaborate discussion of the relationship and distribution of *Certhia familiaris* and *C. brachydactyla*.

A Contribution to Our Knowledge of Molting in Birds. By E. Stresemann. The terminology of Dr. J. Dwight is discussed and explained.

On Our Knowledge of the Dipper. By H. Sachtleben.

Observations on Some Hitherto Overlooked Names of C. L. Brehm. By A. Laubmann.

Corvus capensis kordofanensis (p. 103) proposed for *C. c. minor* Heugl., nec Brehm.

Miscellanea Ornithologica IV. By C. E. Hellmayr. (XII) Four New Forms from Tropical America. *Catharus melpomene sierrae* (p. 126), Santa Marta; *Planesticus serranus cumanensis* (p. 127), Cumana, Venezuela; (the other two appeared previously in the "Anzeiger Orn. Gesell. Bayern" see below). (XIII) Nomenclatorial. *Corvus brachycercus* (p. 131) proposed for *C. affinis* Rupp.; *Erythromyias timorensis* (p. 133) for *Sazicola pyrrhonotus* S. Muller. Also many changes.

Proceedings of the Bavarian Ornithological Society. XIV, No. 2. December 15, 1919.

The Beginning of Bird Song at Early Dawn. By C. Zimmer. An elaborate discussion of this subject and its relation to the rising of the

sun, with extended data on the singing of German birds. A more technical treatment of a problem that recently interested many American bird students.

A New Woodpecker from Lithuania. By H. Sachtleben. *Dryobates leucotos stechowi* (p. 181).

Proceedings of the Bavarian Ornithological Society. XIV, No. 3. April 29, 1920.

On the European Black-capped Titmice. By E. Stresemann and H. Sachtleben.—Seven races recognized with elaborate discussion of variation and distribution.

On Schomburgk's 'Birds of British Guiana'. By C. E. Hellmayr. **Proceedings of the Bavarian Ornithological Society.** XIV. Special Number. February 20, 1920.

In memory of Hugo Mayhoff, containing his paper on the Breeding Birds of the Lake Region of Moritzburg and critical description of his collections of water birds.

"Anzeiger". Bavarian Ornithological Society. No. 1. February 25, 1919.

Gengler and Stresemann describe *Dryobates major balcanicus* (p. 2) Kaluckowa; Hellmayr describes; *Troglodytes musculus bonariae* (p. 2) La Plata; *Pseudocolaptes boissonneautii medianus* (p. 3) Leimabamba, Peru. Sachtleben describes *Carduelis carduelis balcanica* (p. 3) Kaluckowa, Macedonia. Stresemann describes: *Cinclus cinclus orientalis* (p. 4), *Cettia cetti mülleri* (p. 5), *Picus viridis doleini* (p. 5) all from Macedonia and *P. v. romanicae* from Bucharest.

"Anzeiger". Bavarian Ornithological Society. No. 2. June 28, 1919.

Sachtleben describes *Sitta europaea cisalpina* (p. 7) Rome; Stresemann describes: *Falco moluccensis bernsteini* (p. 8) for *F. m. orientalis* preoccupied; *Emberiza schoeniclus volgae* (p. 9) South Russia; *Dryobates major italicae* (p. 9) Bologna; and *D. m. candidus* (p. 10) Bucharest.

Ornithologische Monatsberichte. 28, No. 1-2. January-February, 1920. [In German.]

A New *Bradypterus*. By H. Grote. *B. roehli* (p. 7). West Usambara.

A New Name for *Turdus auritus* Verr. By A. Laubmann. *T. mupinensis* (p. 17).

Ornithologische Monatsberichte. 28, No. 3-4. March-April, 1920.

Bird-banding in Sweden. By H. Rendahl. A Fish Hawk and Herring Gull band in Sweden found in Denmark, a Pigeon in Portugal, and a Starling in England.

Journal für Ornithologie. 68, No. 2. April, 1920.

Ornithological Observations in the Southern Ural Region (Orenburg). By H. Grote (continued).

Avifauna of the western Pripjet Swamps. By O. Graf Zedlitz—*Bonasia bonasia grassmanni* (p. 227) is described as new from East Prussia.

Journal fur Ornithologie. 68, special number.

Birds of Egypt. (Insessores, Scansores and Coraces.) By Alexander Koenig.—A most elaborate treatment going into etymology of names, minute description of eggs with weights and measurements, etc.

Ornithological Articles in Other Journals.¹

Riley, J. H. Four New Birds from the Philippines and Greater Sunda Islands. (Proc. Biol. Society of Washington, 33, pp. 55-58. July 24, 1920.)—*Anthreptes malacensis paraguae* (p. 55) Palawan; *A. m. bornensis* (p. 55) Po Bui, N. Borneo; *Enodes erythrophrys centralis* (p. 56) Celebes; and *Munia punctulata particeps* (p. 57) Celebes.

Oberholser, H. C. Description of a New Clapper Rail from Florida. (*Ibid.* pp. 33-34. July 24, 1920.)—*Rallus longirostris helius* (p. 33) Florida Keys.

Hartert, E. More Notes on the Crested Larks of the Nile Valley (Novitates Zoologicae, XXVI, No. I, pp. 36-40, May, 1919).

Baker, E. C. Stuart. Further Notes on Some Dicuridae (*Ibid.* pp. 41-45.)

Hartert, E. Types of Birds in the Tring Museum. B. Types in the General Collection. (*Ibid.* pp. 123-178.)—This is only the first installment, Corvidae-Meliphagidae, and cover 338 types of which only 40 have proven to have been already described or otherwise invalid. The types in the Brehm collection were listed in Novit. Zool., 1918, pp. 4-63.

Baker, E. C. Stuart. Some Notes on the Genus Surniculus. (*Ibid.*, No. 2. January 20, 1920, pp. 291-294.)—*S. lugubris stewarti* (p. 293). Ceylon is described as new.

Hartert, E. Explanation of Plates V and VI (Novit. Zool. XVI, No. 2, p. 358.)—Figuring the following rare species: *Sylvietta neumanni*, *Pachycephala moroka*, *P. tenebrosa*, *Melipotes, ater* *Dicaeum nigrilore*.

Hartert, E. The Birds of the Commander Islands. (*Ibid.* No. 3, June 20, 1920, pp. 128-158.)—Description of a collection of 860 skins made by N. Sokolnikoff and now in the Tring Museum. It comprises 152 species of which *Erolia maritima quarta* (p. 137) is described as new.

Hartert, E. and Gourdain, F. R. C., The Birds of Buckinghamshire and the Tring Reservoirs. (*Ibid.* pp. 171-259, Pl. XII and XIII.)—An admirable local avifauna.

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Collinge, W. E. On the Proposed New Subspecies of the Little Owl. (*Carine noctua* Scopoli.) (Scottish Naturalist, 1920, No. 101-102. May-June, 1920, p. 65.)—Claims that the color difference is individual and not racial.

Evans, Wm. Breeding of the Black-headed Gull in the Forth Area. (*Ibid.*, p. 71.)

Rintoul, L. J. and Baxter, E. V. Report on Scottish Ornithology in 1919, including Migration. *Ibid.* No. 103-104. July-August, 1920, pp. 99-144.

Taverner, P. A. The Scoters and Eiders. (Canadian Field Naturalist, XXXIV, No. 3, March, 1920.)—With drawings of the heads of the various species by C. E. Johnson

Wood, A. A. An Annotated List of the Birds of Coldstream Ontario Vicinity. (*Ibid.*)—194 species listed.

Hornady, W. T. Alaska Can Save the American Eagle (Natural History, XX, No. 2, March-April 1920. See also No. 3 for additional note.)—No less than 8356 eagles have been slaughtered and paid for by the Alaskan government under the recent bounty act up to May 1, 1920. Petitions of scientific and other organizations to the Alaskan Legislature for the repeal of this law are solicited and should be forwarded to the National Association of Audubon Societies, 1974 Broadway, N. Y.

Rockwell, R. B. Trials and Tribulations of a Nature Photographer. (*Ibid.*)—Deals with birds in part.

Bailey, Alfred M. The Brown Pelicans (*Ibid.*)—Excellent photographs of the breeding colonies on the Louisiana coast.

Pearson, T. G. William Dutcher. In Memoriam. (*Ibid.* No. 3. May-June, 1920.)

Bailey, Alfred M. The Silver-winged Sea Birds (*Ibid.*)—Terns and Gulls of the Louisiana Coast.

Shufeldt, R. W. Tame Pigeons Alighting in Trees. (Guide to Nature, XII, No. 2. July, 1920.)—Regarded as very exceptional.

Shufeldt, R. W. Personal Recollections of Extinct and Nearly Extinct Birds. (The Conservationist, Albany, N. Y., III, No. 5, p. 74.)—Five ducks seen in the winter of 1867 on Long Island Sound now considered to have been Labrador Ducks. A Carolina Parakeet was seen from the train at a small station somewhere in Kansas about 1884 and an Ivory-billed Woodpecker in southern Alabama in the eighties flying high overhead.

Hall, A. F. Basset. On the Occurrence of the Crested Penguin (*Eudyptes chrysocome*) in Australia. (Records of the Australian Museum, XII, No. 6. September 23, 1920.)

Dice, Lee R. The Land Vertebrate Associations of Interior Alaska. (Occasional Papers Mus. Zool., Univ. Michigan, No. 85, May 25, 1920.)—Extended reference to birds.

Redington, Paul G. A California Condor seen near Head of Deer Creek. (California Fish and Game. July, 1920. p. 133.)

Phillips, Charles. A Review of the Winter Visitant Birds in Minnesota for 1919-1920. (Fins, Feathers and Fur, No. 22. June, 1920.)

Adams, William C. Winter Feeding of Birds. (Bull. Amer. Game. Protective Asso. July, 1920.)—With illustrations of ducks making use of holes in the ice on Lake Ontario.

Brooks, Alan. The Trumpeter Swan in British Columbia. (London Field, July 31, 1920.)—By no means extinct. Has known it for thirty years and there has been little change in its numbers, was never common nor does it associate large flocks.

Baker, E. C. Stuart. The Game Birds of India. (Journ. Bombay Nat. Hist. Soc., XXVI, No. 4, 1920, pp. 885-906.)—The Tragopans.

Inglis, C. M. O'Donel, H. V. and Shebbeare, E. D. A Tentative List of the Vertebrates of the Jalpaiguri District, Bengal. Part II. Birds (*Ibid.* pp. 988-999.)—An annotated list.

Donald, C. H. The Birds of Prey of the Punjab. (*Ibid.* pp. 1000-1002.)

Robinson, H. C. and Kloss, C. Boden. On a Collection of Birds from North-eastern Sumatra. (Jour. Straits Branch, Royal Asiatic Society, No. 80, May, 1919, pp. 73-133.)—There are described as new: *Macropygia ruficeps sumatranus* (p. 77); *Brachylophus chlorolophus vanheysti* (p. 97); *Cyornis vanheysti* (p. 104); and *Buchanga leucophaea* (p. 125).

In the same journal and under the same title "Part II" (No. 81, March, 1920, pp. 79-115.) is a report on an additional collection from the same locality, district of Deli, with the following new forms: *Cryptolopha montis* (p. 99); *Pyconotus bimaculatus barat* (p. 103); and *Tephrodornis pelvica* (p. 109).

Laubmann, A. Contribution to our Knowledge of the Forms of *Alcedo atthis*. (Archiv. fur Naturg., 1918 (LXXXIV) Abt. A. heft 7, pp. 43-82.) [In German.]

Additional Publications Received.

Avicultural Magazine. XI, No. 9. September, 1920.

Bird Notes and News. IX, No. 2. Summer, 1920.

Bluebird. XII, Nos. 6-8. May-July 1920.

British Birds. XIV, No. 4. September, 1920.

Bulletin Charleston Museum. XVI, No. 5. May, 1920.

Directory of Officials and Organizations Concerned with the Protection of Birds and Game, 1920. (U. S. Dept. Agr. Department Circular 131.)

Emu, The. XX, Part 1. July, 1920.

McClymont, J. R. Essays on Early Ornithology and Kindred Subjects. London, B. Quaritch, 1920.

Records of the Australian Museum. XII, Nos. 1-9; XIII, No. 2.

South Australian Ornithologist. V, Part 3. July, 1920.

CORRESPONDENCE**Popular Bird Names.**

EDITOR OF 'THE AUK':

The central idea of such of your remarks on pages 503-505 of the current volume of your journal as are in opposition to the propositions submitted in my letter of May 21 appears to be contained in your statement that "We cannot enforce upon the public what the public will not have," for you admit that the said propositions are "all very well in theory." May I say that in your very opposition you are in agreement with me, for the intent of my letter, as carefully explained in the third and the last paragraphs thereof, was to suggest a way of finding out definitely what, in matters of popular bird nomenclature, the public will have, so that it might be given them in the next edition of the A. O. U. 'Check-List.' I did not propose that the A. O. U. Committee on Nomenclature adopt forthwith the propositions presented, but merely that they submit them to the bird-studying, bird-loving public for their verdict. Have you not, in your remarks, given the reasons why you personally would express approval or disapproval of the various propositions in such a referendum, instead of speaking of the question of the referendum itself?

Again I respectfully suggest that the A. O. U. Committee on Nomenclature obtain an expression of popular will concerning the points embodied in the propositions in my former letter, rather than proceed to arrange the popular nomenclature of the 'Check-List' in accordance with any assumption, no matter how well-founded they may consider it.

HARRISON F. LEWIS.

P. O. Box No. 6, Quebec, P. Q.,
August 6, 1920.

[We regret if we misunderstood or misrepresented Mr. Lewis's suggestion. It is quite in order and proper that any suggestions should be made to the Committee and they will, we are sure, receive careful consideration. It would seem more desirable, however, that they be sent direct to the Committee rather than be published in 'The Auk,' as the journal is already overcrowded.—EDITOR.]

Baker on the Birds of the Pleistocene.

EDITOR OF 'THE AUK':

The University of Illinois has very recently published a sumptuous monograph entitled 'The Life of the Pleistocene or Glacial Period' by Mr. Frank Collins Baker, Curator of the Museum of Natural History of the University of Illinois. It is a beautifully gotten-up volume of nearly 500 pages, and illustrated by no fewer than 57 plates.

In the absence of a subtitle, the reader would naturally be led to believe that the study covered all plants and animals that formed the flora and fauna of the Pleistocene or Glacial period throughout the world, in so far as it has come to be known, including such other knowledge as may have been contributed to the subject in this work. This, however, is by no means the case; for, as its author explains (p. iv), "the area selected for study includes only that part of the United States and Canada (east of the Rocky Mountains) that was covered by the great continental ice sheets. Deposits outside of this area, therefore, cannot be included, except for purposes of comparison, as there is no way of deciding just which interval they may represent. In fact, many of the records beyond the glaciated territory represent deposits which were forming continuously throughout the entire time of the Pleistocene, they not being greatly influenced by the great ice sheets. With this statement of the purpose of the work, it is easily seen that the title 'Life of the Pleistocene' is not inappropriate."

The present writer fails to catch the point of this explanation, inasmuch as were only the *title* of this work at hand, the person considering it would surely be led to think that the life of the entire Pleistocene period was to be taken into consideration.

An especially useful and extensive bibliography is found at the end of the work (pp. 404-448), and in the main this supports the author's argument with respect to his title, as, with but few exceptions, only such works are quoted as refer to the Pleistocene of eastern North America—that of the Pacific Coast being entirely ignored.

Now those who are at all familiar with the fossil birds of the Pleistocene are well aware of the fact, that quite a number of them have been discovered in that area of North America covered by the work under consideration. These have been chiefly figured and described by Cope, Marsh, Sellards, and the present writer, and are reported from New Jersey, North Carolina, Maryland, Nebraska, Texas, Florida, and perhaps other eastern States, or from localities east of the Rocky Mountains. Turning to the bibliography, we are surprised to find that none of Cope's are cited; only one paper of Marsh's is entered, and that refers to a *Mastodon*; while the list of Pleistocene birds described and figured by the present writer from Vero, Florida, are accredited to Doctor Sellards, or the birds are not referred to by name at all, although the mammals are so listed.

As a matter of fact, the present writer has described more Pleistocene birds, existing and extinct, from the eastern part of the United States, than all other palaeontologists combined up to date. This omission is to be greatly deplored, for in such a formal work as the one here considered, the ignoring of so important a group of vertebrates as Pleistocene *birds*—the rarest of all fossil vertebrata—casts not a little doubt upon the thoroughness of still other subjects treated in this volume.

R. W. SHUFELDT.

Washington, D. C., June 25, 1920.

NOTES AND NEWS

WILLIAM DUTCHER, a Fellow and Councillor of the American Ornithologists' Union, died at his home in Chevy Chase, Maryland, on July 1, 1920, in the seventy-fifth year of his age. To him, more than to any one individual, is due the present interest in wild bird conservation; the organization and development of the National Association of Audubon Societies, of which he was president from the time of its conception until his death; and the manifold activities that have grown out of this organization. His life is an illustration of what can be accomplished by one who is willing to devote his entire energy to a cause and to persevere in spite of all obstacles. Mr. Dutcher had no backing, save such as he provided himself when, as chairman of the A. O. U. Committee on Bird Protection, he became seriously interested in what was to be his life work, but through his earnestness he interested one influential person after another in the cause until he had built up the organization which will be his monument for all time.

The last years of his life have been particularly sad, since on October 19, 1910, on the eve of a testimonial banquet intended to celebrate the achievement of his greatest ambition, the establishment of an endowed organization for wild bird conservation, he was stricken with paralysis which rendered him speechless and made further active work impossible. He recovered his physical health to some degree but was unable to move about freely, although he did attend the meeting of the Union in New York City in 1918 and some of the meetings of the National Association of Audubon Societies. His power of speech was never regained.

Beside the splendid work that he accomplished as Chairman of the A. O. U. Committee on Bird Protection, before this was taken over by the Audubon Societies, he rendered valuable service as Treasurer of the Union from 1887 to 1903, and as a member of the Council.

In his earlier years he was also an active field student, specializing on Long Island, and published many important papers of the birds of this region besides forming a valuable collection which is now in the American Museum of Natural History.

In those who, like the writer, were closely associated with him in the beginning of his life work, his kindliness, generosity and earnestness of purpose inspired a love and admiration that grew stronger as the years passed by; while to the world at large so intimately has his name become associated with the cause of bird protection, that mention of the one at once recalls the other. This in itself is a monument of which one might well be proud.

The president of the A. O. U. has appointed Dr. T. S. Palmer, who was closely associated with Mr. Dutcher in his work, to prepare a memorial address to be read at the meeting of the Union in November and published in 'The Auk' for January, 1921.—W. S.

HERBERT HUNTINGTON SMITH, Curator of the Alabama Museum of Natural History, and one of the ablest and most experienced American field naturalists, met his death on March 22, 1919, by being run over by a freight train at Tuscaloosa, Ala. For some years he had been very deaf and while walking on the railroad track he failed to hear the approaching locomotive.

Mr. Smith was born at Manlius, N. Y., January 21, 1851. He graduated from Cornell University in the class of 1872, and on October 5, 1880, married Miss Amelia Woolworth Smith, of Brooklyn, N. Y. To his wife, who was his constant companion in all his field trips and who prepared many of his specimens, especially the birds, was due in large part his success as a collector. When only 19 years of age and still a student at Cornell, he accompanied his teacher, Prof. C. F. Hartt, to the Amazon on what proved to be the first of a series of trips to the tropics. In 1873 he returned to Brazil to collect along the Amazon, spending about two years in the vicinity of Santarem, a year on the northern branches of the river and on the Tapajos, and a few months in Rio de Janeiro. Upon his return home he was commissioned to write a series of articles on Brazil for 'Scribner's Magazine,' and in 1879 appeared his book on 'Brazil—the Amazons and the Coast.'

A few months after their marriage, Mr. and Mrs. Smith went to southwestern Brazil, where most of the time between 1881 and 1886 was spent in the vicinity of Chapada and Cuyabá in the Province of Matto Grosso. Of the large collections of birds secured in this region about 4000 specimens were acquired by the American Museum of Natural History and 538 by the British Museum. In 1889 the Smiths collected in southwestern Mexico, chiefly in Guerrero and Oaxaca, for F. D. Godman, who was then securing material for the 'Biologia Centrali-Americana.' The years from 1890 to 1895 were spent in the West Indies, in Trinidad and the Windward Islands, in the interests of the West Indian Commission of the Royal Society. From 1898 to 1902 Mr. Smith was connected with the Carnegie Museum and during this time he spent three years in Colombia in the Province of Santa Marta. Here he became so seriously ill that for a time it was feared he would not recover and this experience put an end to further work in the tropics. After a year in the Museum he determined to take up his residence in the South at Wetumpka, Ala., where he devoted himself largely to collecting and studying freshwater shells. In 1910 he became curator of the Alabama Museum of Natural History, a position which he held until his death.

He was an accomplished linguist and in addition to his book on Brazil he published, in 1886, in Portuguese, 'De Rio Janeiro a Cuyabá.' He was also the author of 'His Majesty's Sloop Diamond Rock' which appeared under the name of H. S. Huntington. He was a tireless collector, but in addition he was a true field naturalist, perhaps one of the best that America has produced. During his sojourn in Brazil his work at-

tracted the attention of the Emperor Dom Pedro II and some years ago Lord Walsingham pronounced him one of the two ablest entomological collectors. In a sketch of his life from which these facts are largely derived (*Science*, XLIX, pp. 481-483, May 23, 1919), Dr. W. J. Holland ranks H. H. Smith with Humboldt and Bonpland, Wallace, Bates, Natterer, Tschudi, J. B. Hatcher and J. D. Haseman, "who courageously faced dangers in the wilderness in order to secure information at first hand as to the fauna and flora of the great continent where they labored."

T. S. P.

NICHOLAS ALEXIEVICH SARUDNY (or following the Russian form of his name, Nikolai Aleksyevich Zarudnuii), an eminent Russian ornithologist, died in March, 1919, at Tashkent in Turkestan, where he was for some years curator of the museum. According to 'The Ibis' for July, 1920, Major F. M. Bailey, of the Indian Political Service, who has recently been in Turkestan, found Sarudny and his wife "living in one room of his house, all the others having been taken from him by the Bolsheviks. In this one room was his private collection of birds stored in cardboard boxes and filling nearly the whole space up to the ceiling. This valuable collection was 'naturalized' by the Bolsheviks at the time of his death, and is now in the museum at Tashkent."

Dr. Sarudny was an authority on the birds of certain parts of Russia and also on those of Turkestan, Baluchistan, and Persia. He was a careful field naturalist and collector and published a number of papers especially in the 'Messenger Ornithologique' on the birds of Central Asia. His most important works include 'An Excursion through Northeastern Persia' with an account of the birds of that region, 1900 (262 pages); 'Birds of Eastern Persia,' 1903 (467 pages); 'Verzeichnis der Vögel Persiens,' 1911; 'Birds of the Pskov Government,' 1910; and 'Birds of the Aral Sea,' 1916 (229 pages). Three of these were published in Russian and the 'Verzeichnis' in German in the 'Journal für Ornithologie,' 1911, pp. 185-241. Sarudny made four expeditions to Persia in 1896, 1898, 1900-01, and 1903-04, and published several papers on each trip. The second and third expeditions were mainly in eastern Persia and the last, in western Persia, formed the basis of 29 separate articles, most of which were devoted to birds.—T. S. P.

FREDERICK WEBB HEADLEY, of Hertford, England, a member of the British Ornithologists' Union and a Fellow of the Zoological Society of London, died November 25, 1919, after an operation. He was the second son of Rev. Henry Headley, of Brinsop Vicarage, Herefordshire, and was born April 10, 1856. His education was received at Harrow School and the University of Cambridge, from which he graduated in 1878. Two years later he became Assistant Master in Haileybury College, Herts, where he remained until a few months before his death.

According to a sketch of his life in 'The Ibis' for July, 1920, it was his ambition to take a trip around the world and if he had been able to secure passage he would have started in August, 1919. His last work was devoted to field observations during a month spent in making notes on migration at Bardsey Lighthouse, Wales, just before undergoing his operation.

To American readers he is known chiefly by his admirable books on 'The Structure and Life of Birds,' 1895, and 'The Flight of Birds,' 1912. He was also author of 'Fauna and Flora of Haileybury,' 'Life and Evolution,' 'Darwinism and Socialism,' and some short papers.—T. S. P.

DR. HENRY KEMBLE OLIVER, an Associate of the American Ornithologists' Union since 1900, and a Life Associate since 1909, died at his apartment in Boston, on October 25, 1919. Dr. Oliver was the son of General Henry K. Oliver and was born in Salem, Mass., in 1829. He graduated from Harvard in the class of 1852 and from the Harvard Medical School in 1855. After two years in Paris and Vienna he entered upon the practice of medicine in Boston, where he later became one of the leading physicians. During the Civil War he was appointed medical inspector of camps in McClellan's army.

Dr. Oliver was a philanthropist and one of his principal gifts was a donation of several hundred thousand dollars to Harvard University on condition that the name of the donor should be kept secret until his death. When his health began to fail some years ago, he made over practically his entire fortune to the University to found a department of hygiene, reserving just enough for his own living and personal needs. At the time of his death, which occurred just on the eve of his ninetieth birthday, he was not only the oldest member of the Union but the oldest American ever associated with the Union.—T. S. P.

JOHN HENRY FLANAGAN, an Associate of the American Ornithologists' Union since 1898, died of cerebral haemorrhage at his home in Providence, R. I., February 23, 1920, after an illness of three months. At the time of his death he was in his 52nd year, having been born at Cranston, R. I., July 7, 1868. His early years were passed at Apponaug and his education was received at La Salle, Manhattan College and the Harvard Law School, from which he graduated in 1895. He studied law in the office of Edwin D. McGuinness, then Mayor of Providence, and his partner, John Doran. Upon the death of Mr. McGuinness in 1901 he became a member of the firm which was then changed to Doran and Flanagan. He was a member of the Rhode Island Bar Association and at one time was Solicitor of the town of Warwick.

Mr. Flanagan was deeply interested in birds and their eggs and had one of the best private collections of eggs in the state, but apparently published little on ornithology. He was a member of the Providence

Gun Club and the Providence Fish and Game Association and did good work in behalf of the protection of wild life. For several years he served as secretary of the Rhode Island Bird Commission and from 1905 to 1908 was Bird Commissioner for Providence County and Chairman of the Board.

He is survived by a sister, Josephine A., and three brothers, Edward J., Thomas L., and Dr. William F. Flanagan.¹—T. S. P.

ROBERT LENOX MAITLAND, an Associate of the American Ornithologists' Union since 1889, died at his home in New Rochelle, N. Y., on March 11, 1920, in his 66th year. Mr. Maitland was born in New York City, December 16, 1854, and was the son of Robert Lenox Maitland, a New York merchant, and a nephew of James Lenox, founder of the Lenox Library. He entered his father's office on Broad Street, and later became a partner in the commission firm of Robert Maitland & Co. He afterwards retired and devoted his entire time to charitable and other interests, serving on various boards and committees. Mr. Maitland was unusually modest and never sought prominence, but devoted himself earnestly to whatever he was engaged in. Although he does not appear to have published on birds his interest in the subject is attested by the fact that he maintained his membership in the Union for 30 years.—T. S. P.

A biography of Thure Ludwig Theodor Kumlien of Wisconsin, who died in 1888, is in course of preparation by Mr. Publius V. Lawson of Menasha, Wis. The paper will be illustrated and will probably be published by the Wisconsin Academy of Science, Arts and Letters.

The Government publications on birds now in press, which will probably be issued at an early date, include the second part of Bent's 'Life Histories' on Gulls and Terns, and a report by H. S. Swarth on the 'Birds of the Papago Saguaro National Monument, Arizona.' The former is a bulletin of the U. S. National Museum and the latter a publication of the National Park Service in the Department of the Interior.

The close of the twentieth year of the new century recalls the fact that the 20th Century has already witnessed great progress in ornithology, as well as in other branches of science, but it is difficult to determine the accomplishments of any particular year. It has been the custom for some time for the president of the British Ornithologists' Club to review the events of the preceding year at the annual meeting of the Club

¹ A sketch of Mr. Flanagan's life from which these facts were mainly derived appeared in the 'Providence Evening Bulletin' of February 24, 1920, and was republished with his portrait in 'The Oologist,' XXXVII, p. 42, April 1, 1920.

but these reviews are all too brief. In this country 'Bird Lore' has published brief summaries for 1901, 1902, and 1910,¹ and 'The Auk' one for 1917², but summaries for the other years are lacking. At recent meetings of the A. O. U. some time has been devoted to a discussion of ornithological progress during the year and it is hoped that members will bear this feature in mind and contribute notes on any work which has come under their observation in 1920.

The excursion of the Swiss Society for Bird Study and Bird Protection to the Swiss National Park occupied 9 days from July 20 to 28 inclusive. The time was spent in tramps through the region from Scans to Zernez in the upper Engadine. Scans is situated at an elevation of 1670 meters, Zernez at 1497, and the highest point reached on the trip was about 3000 meters. The 57 species of birds observed were all land birds and included several of the larger species characteristic of the Alps.

The annual meeting of the Royal Australasian Ornithologists' Union will be held in October, 1920, in Perth, Western Australia. Reports recently received indicate that a good attendance is expected. When it is recalled that the journey from Sydney to Perth is comparable to that from New York to Denver, the enthusiasm of members of the R. A. O. U. in attending distant meetings is worthy of the highest commendation.

The year 1920 marks the bicentenary of Gilbert White, who was born at Selborne, England, July 18, 1720, O. S. According to the London Field of June 26, 1920, p. 945, a memorial window of three lights has been placed in the parish church at Selborne to commemorate his service to ornithology. The subject of the design is "St. Francis preaching to the Birds."

Mr. Rollo H. Beck sailed from San Francisco on Sept. 4 for Tahiti, where he will begin systematic collecting in the South Pacific in the interests of the American Museum of Natural History.

Members intending to present papers at the next annual meeting to be held in Washington, D. C., November 9-11, are requested to notify the Secretary, 1939 Biltmore St., N. W., before November as to the titles of their communications and the length of time required for their presentation. In order to allow time for discussion, which is one of the principal objects of the meeting, papers which are not illustrated should be limited to 30 minutes or less. As previous experience has shown many papers require much more time than has been estimated and authors are therefore requested to make actual tests of the time required for the pre-

¹ Bird Lore, III, pp. 215-216, 1901; IV, pp. 204-205, 1902; XIII, pp. 8-11, 1911.

² Auk, XXXV, pp. 107-110, 1918.

sentation of their communications so as to avoid taking up the time of others. A special invitation is extended to Associates to present papers and take part in the discussions. While all who are associated with the Union are earnestly urged to attend the meeting, this request is emphasized in the case of Members and Fellows upon whom rest the responsibilities of the organization. It is their duty to be present if possible as their council is required in conducting the business of the Society. The business meeting and elections will, as usual, be held on the evening of November 8 preceding the scientific sessions and a full attendance is particularly desired.

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ERRATA.

- Page xii, line 33, for VAN ORT read VAN OORT.
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“ 21, “ 5, for McCLEOD read McLEOD.
“ 21, “ 7, for FRAZER read FRAZAR.
“ 27, “ 13 from bottom, for E. B. WHITE read F. B. WHITE.
“ 175, “ 10, for June read April.
“ 351, “ 3 from bottom, for *Public Library read *H. H. Bailey.
“ 471, “ 16 from bottom, for 1865 read 1857.
“ 492, “ 11, for use of and read use of > and <.
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“ 508, “ 10, for 1895 read 1894.
“ 508, “ 12, for 1912 read 1910.
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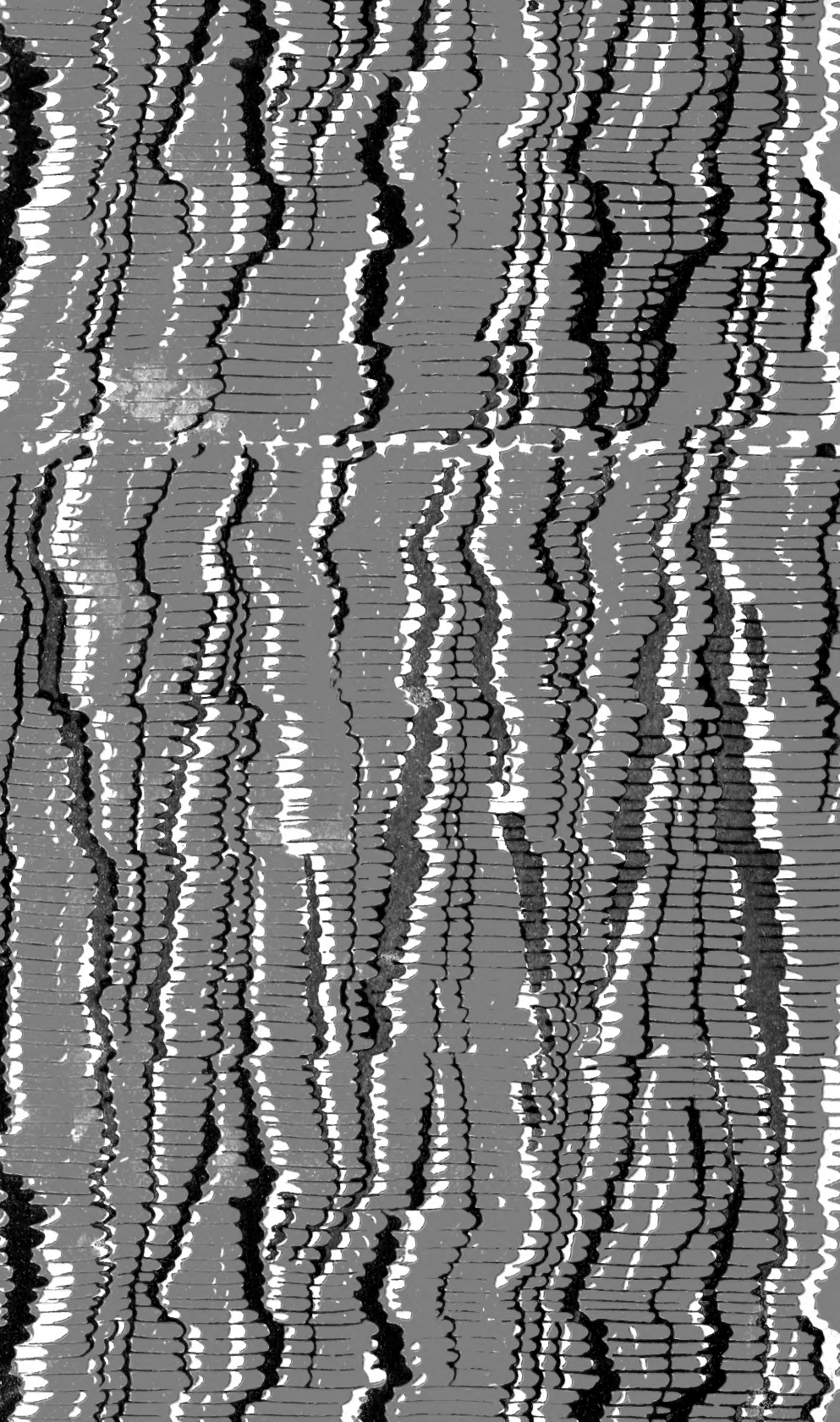
Meeting	Date	Place	Fellows Present	Total Membership
1	1883, Sept. 26-28	1st New York	21	23
2	1884, Sept. 30-Oct. 2	2d New York	16	143
3	1885, Nov. 17-18	3d New York	16	201
4	1886, Nov. 16-18	1st Washington	20	251
5	1887, Oct. 11-13	1st Boston	17	284
6	1888, Nov. 13-15	2d Washington	20	298
7	1889, Nov. 12-15	4th New York	20	400
8	1890, Nov. 18-20	3d Washington	20	465
9	1891, Nov. 17-19	5th New York	14	493
10	1892, Nov. 15-17	4th Washington	20	557
11	1893, Nov. 20-23	2d Cambridge	17	582
12	1894, Nov. 12-15	6th New York	15	616
13	1895, Nov. 11-14	5th Washington	19	667
14	1896, Nov. 9-12	3d Cambridge	14	673
15	1897, Nov. 8-11	7th New York	18	679
16	1898, Nov. 14-17	6th Washington	21	695
17	1899, Nov. 13-16	1st Philadelphia	16	744
18	1900, Nov. 12-15	4th Cambridge	19	748
19	1901, Nov. 11-14	8th New York	18	738
20	1902, Nov. 17-20	7th Washington	25	753
20a	1903, May 15-16	1st San Francisco	7	—
21	1903, Nov. 16-19	2d Philadelphia	19	775
22	1904, Nov. 28-Dec. 1	5th Cambridge	17	808
23	1905, Nov. 13-16	9th New York	17	860
24	1906, Nov. 12-15	8th Washington	24	750
25	1907, Dec. 9-12	3d Philadelphia	20	850
26	1908, Nov. 16-19	6th Cambridge	17	888
27	1909, Dec. 6-9	10th New York	19	866
28	1910, Nov. 14-17	9th Washington	23	897
29	1911, Nov. 13-16	4th Philadelphia	18	887
30	1912, Nov. 11-14	7th Cambridge	18	929
31	1913, Nov. 10-13	11th New York	28	992
32	1914, Apr. 6-9	10th Washington	27	1101
33	1915, May 17-20	2d San Francisco	11	1156
34	1916, Nov. 13-16	5th Philadelphia	26	830
35	1917, Nov. 12-15	8th Cambridge	21	891
36	1918, Nov. 11	12th New York	14	953
37	1919, Nov. 10-13	13th New York	28	1024

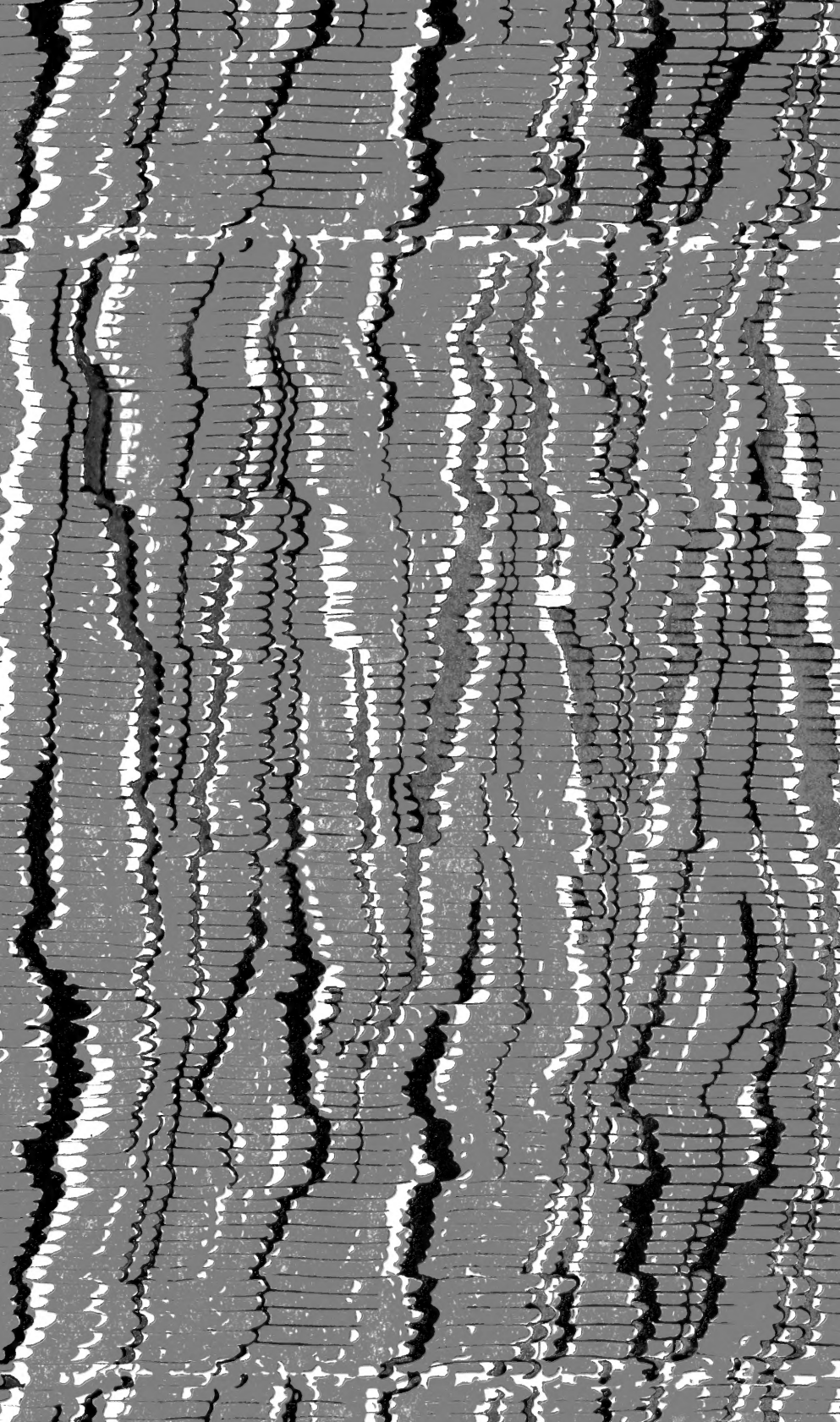
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